DOCUMENT RESUME

ED 061 552 CG 007 129

AUTHOR	Reynolds, Maynard C., Ed.
TITLE	Proceedings of the Conference on Psychology and the Process of Schooling in the Next Decade: Alternative Conceptions.
INSTITUTION	Minnesota Univ., Minneapolis. Dept. of Special Education.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Bureau of Educational Personnel Development.
PUB DATE	Sep 71
GRANT	OEG-0-9-336005(725)
NOTE	274p.
EDRS PRICE	MF-$0.65 HC-$9.87
DESCRIPTORS	Behavior Change; Change Agents; Child Development; Cognitive Development; Cognitive Processes; Education; *Educational Change; *Educational Innovation; Educational Objectives; *Educational Philosophy; Educational Problems; Guidance Personnel; Intelligence; Learning; *Psychologists; Psychology; School Psychologists; *Schools; Social Experience; Student Teacher Relationship

ABSTRACT

The conference intended to stimulate dialogue between psychologists and educators for the purpose of developing "creative propositions" that address the functions of schooling with the most relevant and advanced psychological knowledge. Most broadly, the papers and critiques are concerned with how psychology could be used to improve: (1) socialization; (2) curriculum development; (3) teaching; and (4) guidance. Some attention is also given to the total functioning of schools, especially organizational change and the community base. Papers deal variously with: (1) an interactional view of learning which weds Dewey and Piaget; (2) the new view of intelligence as a gradually accumulated fund of skills interaction with social experience; (3) the role of school psychologists as teacher advisers; (4) current brain research and its relationship to the problems of education; and (5) the lack of a productive theory of change process. A dissatisfaction with the current schooling process pervades the proceedings. Alternatives and innovations are suggested. (TL)

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PROCEEDINGS of the CONFERENCE on

Psychology and the Process of Schooling in the Next Decade:

Alternative Conceptions

MAYNARD C. REYNOLDS
Editor

$3.50

CG 007 129

PROCEEDINGS
of the
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on

Psychology and the Process of Schooling in the Next Decade: Alternative Conceptions

Editor:

Maynard C. Reynolds

Director, Leadership Training Institute/Special Education
Bureau of Educational Personnel Development
U.S. Office of Education

Chairman, Department of Special Education
University of Minnesota
Minneapolis, Minn.

Technical Editor
Sylvia W. Rosen

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A publication of the Leadership Training Institute/Special Education, sponsored by the Bureau for Educational Personnel Development, U.S. Office of Education.

ACKNOWLEDGEMENT

The project presented or reported herein was performed pursuant to Grant OEG-0-9-336005(725) from the Bureau for Educational Personnel Development, U.S. Office of Education, Department of Health, Education and Welfare. The opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education and no official endorsement by the U.S. Office of Education should be inferred.

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Conference Participants

Maynard C. Reynolds, Ph.D., Editor

Director of Leadership Training Institute/Special Education
Bureau of Educational Personnel Development
U.S. Office of Education

Chairman, Department of Special Education
University of Minnesota

Clyde Parker, Ph.D., General Sessions Chairman

Professor, Department of Counseling and Student Personnel Psychology
University of Minnesota

Carl W. Backman

Professor of Sociology and Chairman, University of Nevada (1966-). Editor, Sociometry. Consultant to National Science Foundation and to National Institutes of Health. Previously, Program Director, Sociology and Social Psychology, National Science Foundation (1965-67); Chairman, Department of Sociology and Anthropology, University of Nevada (1962-64).

B.A. 1948 (Sociology), Oberlin College; M.A. 1950, Ph.D. 1954 (Sociology), Indiana University.

Donald H. Blocher

Professor, College of Education, University of Minnesota (1967-). Previously, Fulbright Professor, Keele University, U. K. (1968-69).

B.A. 1950 (Social Science) and M.A. 1954 (Political Science), Ball State University; Ph.D. 1959 (Educational Psychology), University of Minnesota.

Caleb Gattegno

President, Educational Solutions, Inc., school consultants and performance contractors.

Born in Alexandria, Egypt. Self-taught, Dr. Gattegno obtained all his knowledge about learning first from his observations of himself and then from the many students he began teaching in 1927. Having done research in a number of fields, he received his doctorates in mathematics (University of Basle, 1937) and psychology (University of Lille, 1952).

He translated two of Piaget's books into English before 1950.

Lawrence Kohlberg

Professor of Education and Social Psychology, Harvard University (1968—). Recipient of NIMH Research Scientist Award. Previously Director, Child Psychology Training Program, University of Chicago (1964-68); Fellow, Institute for Advanced Study in the Behavioral Sciences (1961-62). B.A. 1949 and Ph.D. 1958, University of Chicago.

Ogden R. Lindsley

Professor of Education; Director of Educational Research, Children's Rehabilitation Unit, Medical Center; Research Associate, Bureau of Child Research; University of Kansas (1965-). A member of the Editorial Boards of *Behavior Research and Therapy, Journal of Applied Behavioral Analysis, Journal of Behavior Therapy and Experimental Psychiatry, Behavior Therapy*. Consultant to Walter E. Fernald State School, Waverly, Mass.; V.A. Hospital, Topeka, Kan.; Kansas State Department of Public Instruction, Topeka, Kan.; and Johnny Appleseed School and Training Center, Fort Wayne, Ind. Previously, Associate in Psychology, Psychiatry Department, Harvard Medical School (1961-65).

B.A. 1948 (Psychology) and Sc.M. 1950 (Experimental Psychology), Brown University; Ph.D. 1957 (Psychology), Harvard University.

Recipient of Hofheimer Prize, American Psychiatric Association, 1962, and Golden Plate Award, American Academy of Achievement, 1964.

Herman H. Long

President, Talladega College (1964-). President, United Negro College Fund (1970-71) and Member of Executive Committee, Board of Directors, United Negro College Fund. Previously, Staff Supervisor to Director of Staff-Race Relations Department of the American Missionary Association (1944-64); and Director of community self-surveys in race relations for San Francisco; Minneapolis; Burlington, Iowa; Kalamazoo, Mich.; Pittsburgh, Pa.; Trenton, N.J.; and Baltimore, Md.

B.A. 1935 (Philosophy and Psychology), Talladega College; M.A. 1936 (Psychology), Hartford School of Religious Education, Hartford Seminary Foundation; Ph.D. 1949 (Psychology), University of Michigan.

Karl H. Pribram

Professor, Department of Psychiatry and Psychology; Head, The Neuropsychology Laboratories; Stanford University. U.S. Public Health Service Career Research Award (1962-). Associate, Center for the Study of Democratic Institutions (1969-). Previously, Fellow, The Center for Advanced Study in the Behavioral Sciences (1958-59); Director, Neurophysiological Research and Laboratories, Institute of Living, Hartford, Conn. (1951-58).

B.S. 1938 (Biological Sciences), University of Chicago; M.D. 1941, University of Chicago School of Medicine. Diplomate, American Board of Neurological Surgery.

Current editorships include *Neuropsychologia; Brain Research; Experimental Brain Research; International Journal of Neuropharmacology; Brain, Behavior and Evolution; Science of Behavior Series* (Penguin Books); *Behavioral Science; International Journal of Neuroscience.*

Seymour B. Sarason

Professor, Department of Psychology, Yale University (1954). Lecturer, Department of Special Education, Boston University (1961-). Advisory Council, Connecticut Valley Hospital (1952-); Associate Editor, *Journal of Abnormal and Social Psychology* (1958-); Psychology Training Subcommittee, NIMH (1963-). Previously, Director, Psycho-Educational Clinic, Yale University (1963-70). Special Leave of Absence to the National Association for Retarded Children to evaluate (with T. Gladwin) psychological and cultural research in this area (1957-58).

A.B. 1939, Rutgers (Newark, N.J.); M.A. 1940 and Ph.D. 1942, Clark University.

Recipient of Award for Distinguished Contribution to Clinical Psychology, American Psychological Association, September 1969.

Michael Scriven

Professor, Department of Philosophy, University of California, Berkeley (1966-). Chairman, Advisory Board for Evaluation, Central Midwestern Regional Educational Laboratory, Inc. (1968-); Board of Directors, Social Science Education, Inc. (1963-); Advisory Board, World Law Fund, Secondary School Division (1966-); and evaluation consultant, Marin School Board, Social Studies Project (1969-). Previously, Fellow, The Center for Advanced Study in the Behavioral Sciences (1963-64);

Professor, Department of the History and Philosophy of Science, Indiana University (1960-66).

B.A. Honors School of Mathematics and M.A. Combined Honors School of Mathematics and Philosophy, University of Melbourne; Ph.D. Oxford, School of Literae Humaniores.

A member of the Editorial Boards of the *Encyclopaedia of Philosophy*, *American Philosophical Quarterly* (1967-), *Metaphilosophy* (1968-); editorial consultant for *Science* (1963-); Professional Advisory Board, Institute for Rational Psychotherapy (1968-); consulting editor, *International Journal of Psychiatry* (1966-); Advisory Board, Sex Research Institute, Indiana University (1965-); and Editorial Consultant Board, *Contemporary Psychology*.

Louis M. Smith

Professor of Education and Psychology, Washington University (1966-). Part-time Senior Research Associate, Project Director, and Evaluation Specialist, CEMREL, St. Ann, Mo. Consultant to Bureau of Research, U.S. Office of Education and to local public schools and other educational organizations.

A.B. 1950, Oberlin College; M.A. 1953 and Ph.D. 1955, University of Minnesota.

Reva White Allman, Ph.D.
Professor of Education
Alabama State University

Charles Austad, Ph.D.
Associate Professor of Education
Bemidji State College

Bruce Balow, Ph.D.
Director, Training Division
Bureau of Education for the Handicapped
U.S. Office of Education

Edward Barnes, Ph.D.
Director, University-Community Educational Program
University of Pittsburgh

Virginia C. Bennett, Ph.D.
Associate Professor, Department of Psychological Foundations
Director, School Psychology Training Program
Rutgers State University

Jack Birch, Ph.D.
Associate Dean of Education
University of Pittsburgh

Malcolm Davis, Ph.D.
Chief, Special Education Training Branch
Bureau of Educational Personnel Development
U.S. Office of Education

Mr. Otis Fluker
Dean of Students
Stillman College

Michael Gladis, Ph.D.
Associate Chairman, Educational, Developmental and School Psychology
University of Pittsburgh

Arthur Glenn, Ph.D.
Director, Bureau of Pupil Personnel Services
Department of Public Instruction
Harrisburg, Pa.

Nelson Haggerson, Ph.D.
Chairman, Department of Secondary Education
Arizona State University

Mary Hall, Ph.D.
Director, School Psychology Training Program
University of Minnesota

Ronald Hatch, Ph.D.
Associate Professor, Educational Psychology
University of Connecticut

Gerhard K. Haukebo, Ph.D.
Chairman, Department of Education
Moorhead State College

Robert Heimann, Ph.D.
Professor of Counseling and Educational Psychology
Arizona State University

Donald Henderson, Ph.D.
Associate Provost
University of Pittsburgh

Thomas Joynes, Ph.D.
Director of Education and Training
Fair Hills Mental Health Center
Cleveland, Ohio

Max Kaslo, Ph.D.
Principal, Cortez High School
Phoenix, Arizona

William Ohrtman, Ph.D.
Director, Bureau of Special Education
Department of Public Instruction
Harrisburg, Pa.

Jerry Olson, Ph.D.
Assistant Superintendent of System
Programs and Services
Pittsburgh Public Schools

Ed Pastor
Associate Director
Guadalupe Organization Service Center
Guadalupe, Arizona

Paul L. Wall, Ph.D.
Assistant Professor of Psychology and Exceptional Education
School of Education
Tuskegee Institute

Paul Ware
Director, Neighborhood Youth Corps
Jefferson County Board of Education
Birmingham, Ala.

Roger Wilk, Ph.D.
Chairman, Division of Educational Psychology
University of Minnesota

George Young, Ph.D.
Superintendent of St. Paul Public Schools
St. Paul, Minn.

Karen Lundholm
Research Specialist
Department of Special Education
University of Minnesota

Sylvia W. Rosen
Technical Editor

Gordon Amundson
Instructional-Program Director
Department of Conferences and Institutes
University of Minnesota

Preface

Educators are trained in a variety of fields ranging from administration and finance to curriculum development and the teaching of specific subject matter. Traditionally, their expertise is organized to make the schools run more efficiently. Even the knowledge of the school psychologist is employed toward that end—testing and evaluating and pigeonholing in the best interests of the system. This should not be so, for it is a corruption of talent and an affront to the dignity of students and staff alike. We have learned the hard way that what is institutionally efficient is not necessarily educationally productive or right for individual human beings.

It is not to our credit that this conference on "Psychology and the Process of Schooling" was so long in coming—that we have not seriously examined the contribution that psychology can make to education earlier and looked into the reasons it has not been making that contribution. In doing so now, we are coming to grips with the forces that whittle away at the humanity of students and teachers, that interfere with their ability to function effectively, that pollute the mental environment, that block communication, and that debase individual and group behavior.

It was my hope that out of a meeting of distinguished psychologists and educators could come specific recommendations on how psychology can be put to work solving problems that other specialists have been unable to solve. I am especially pleased to have initiated this Conference when I headed the Office of Education's Bureau of Educational Personnel Development, for the proceedings indicate that it served its purpose well.

The Bureau of Educational Personnel Development, as you may know, is responsible for a variety of programs that train and retrain educational personnel. Consequently, it has some influence over what goes into the preparation of teachers, pupil personnel workers, school psychologists, trainers of teachers, trainers of teacher trainers, school administrators, paraprofessionals—all persons involved in the teacher-learning process.

Dr. William L. Smith, who is now acting head of the Bureau, shares my resolution to implement the recommendations of this Conference and to draw heavily upon the science of psychology in the development of training programs and in the preparation of materials used to train teachers. Beyond that, we are both committed to challenging the psychologists who direct many of our projects to make the influence of their discipline felt and to apply their science more abundantly and more industriously to their work in education.

Don Davies
Acting Deputy Commissioner for Development
Office of Education

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Introduction

At a surface glance, psychology would seem to be a continuing, definitive influence in the American system of schooling. For some six decades, the study and treatment of children's learning and developmental problems have absorbed the interests of very many psychologists in laboratories, clinics, and classrooms. Educational psychology is an integral unit of all teacher-training programs. In the schools themselves, psychology is represented by specialists in school psychology and counseling. Why then, a conference focusing on the question, how can the conduct of schooling be improved by the utilization of knowledge from psychology?

While psychologists have been intensely interested generally in how and why children learn and develop, until recently very few have been interested in the processes of schooling that determine, in fact, what and how children will be taught and influenced. Psychologists have long been interested in the problems arising out of schooling but not in schooling itself.

The Conference on Psychology and the Process of Schooling in the Next Decade: Alternative Conceptions, had its origins in several places and converged in the Leadership Training Institute. At its very first meeting the Panel of Advisors to the LTI identified psychology as a prime target for concern and emphasis in trying to rally support for new and innovative training programs. The concern focused on the role of psychologists as organizers of programs for exceptional pupils; psychologists are frequently called upon to test, classify, and place such students and to act as advisers relative to them. It was felt that if a rapprochement were to be effected between special and regular educators, and if better provisions were to be made for children in difficulty, psychologists would surely have to help lead the way. There were, however, many expressions of dissatisfaction about the ways in which functions are now performed by many psychologists in the schools. Through several discussions it became clear that it would be too limiting to confine discussions and plans merely to the roles and training of school psychologists and counselors; the problem encompassed the review and seeking of new perspectives on how psychology could be useful in the schools whether or not it was practised directly by persons who might be called psychologists.

The leadership of the LTI happened to be located in a division of educational psychology at the University of Minnesota that includes departments concerned with counselor and school psychologist training, and with psychology as a general foundation area in the training of educators and in the training of teachers of exceptional students. A clinical center serves as an integrating unit among these several psychologically-oriented programs and departments. Discussions and experimentation at the University of Minnesota within the Division of Educational Psychology provided additional impetus toward the Conference. A third force in the organization of the Conference was the strong interest evidenced by the Bureau of Educational Personnel Development (BEPD) in the areas of training for psychologists. Dr. Don Davies, the head of the Bureau at that time, and Dr. Malcolm Davis, head of the Special Education Unit of BEPD contributed strongly to early plans. Other important assistance was given by Dr. Patrick McGreevy of the Pupil Personnel Services Unit.

The call for the Conference was based on four major points:

1. **As it is currently organized and conducted, schooling is less effective than is essential.**

The public distrust of schools and school systems has reached an unprecedented high level. Change is wanted and expected. Although equal educational opportunity has been affirmed as the political, legal, and moral right of all individuals, our schools for the most part are characterized by lack of equality of educational opportunity. Too many children in our society are deprived of their educational rights because they are economically disadvantaged or different from the white, middle-class population for whom the standards of education were traditionally established. If we are to attain our objective of equal educational opportunity for all children, the prejudices—whether subtle or overt—against poverty, minority groups, and children who are different must be eliminated, and the organization and conduct of schooling must be changed.

2. **Renewed interest is being expressed in applying psychological knowledge in the search for solutions to pressing social problems.**

One indication of the growing interest of psychologists and other behavioral scientists in the urgencies of educational change is the Behavioral and Social Sciences (BASS) Survey.* The participants in that survey were concerned with exploring more effective ways of contributing to the constructive solutions of educational problems but they focused their efforts on how research and training efforts could be better organized to produce needed knowledge and more effective use of that knowledge. The focus of this Conference was directly on the schooling process and psychology's possible contributions thereto.

3. **New models are being sought for the preparation and practice of psychological specialists.**

All over the country community representatives are expressing their growing distrust of school counselors, psychologists, and measurements specialists, among others, and a growing estrangement is evident between teachers and the psychologists who make decisions

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*K. E. Clark & G. A. Miller (Eds.). *The Behavioral and Social Sciences Survey: Psychology*. Englewood Cliffs, N. J.: Prentice-Hall, Inc.

about children. Indeed, the scientist-professional model of training has come under increasing attack from segments of the community of psychologists itself. Clinical psychologists particularly have been in the forefront of recent attempts to change the training programs of psychologists planning to work in the schools. One thrust to effect change has been a revision of the procedures by which the American Psychological Association accredits such training programs. Too, an *ad hoc* Committee on Professional Training recently recommended that the scientist-professional model no longer be the sole reference point for professional training. This recommendation is the reversal of a long-held, monolithic position. Although university departments are being encouraged to seek more effective models for the preparation of psychological practitioners in the schools, no strong, specialized financial support programs to encourage such innovations have as yet been instituted.

4. New models of preparation and practice are being sought for teachers, administrators, and other school personnel.

Currently, a number of programs are being supported by federal funds to create and test new models for (a) the training of both regular and specialized teachers for elementary and secondary schools, (b) the involving of schools, colleges, and communities in the training, and (c) the recruiting of teaching personnel from new and different sources of talent to meet the various needs of children in different settings. A relevant foundation in psychology is essential for all regular and specialized teaching personnel in training, of course, but the ways that psychological knowledge can or should be incorporated in the model programs is still under discussion.

Schooling is in a central position in our society: culturally, it is the link between the past and the future; politically, it provides the preparation for democratic participation; and developmentally, it is the foremost agency promoting mental health and intellectual development in children. Psychology is in an important relation to the process of schooling but, by the same token, the process of schooling is important to the work of all psychological specialists. Since both the educational and psychological communities are seeking to improve the methods of training professional personnel to engage in the processes, this Conference was proposed to build on the confluence of these interests.

The purposes of the Conference were as follows:

1. To support psychologists and experienced educators in the development of "creative propositions" that address the functions of schooling with the most relevant, advanced psychological knowledge.

2. To stimulate a discussion of the implications of the "creative propositions" for programs of preparation for teachers, administrators, and psychological specialists in the schools.

3. To stimulate a discussion of the implications of the "creative propositions" for programs of preparation for teachers, administrators, and psychological specialists in the schools.

4. To disseminate the "creative propositions," critiques, and the implications for broader review.

5. To stimulate the development of experimental models of preparation of school personnel which are based on the "creative propositions."

Among the many possible approaches to the focal question of the Conference, the one deemed most appropriate was the four functions of schooling, that is, how could knowledge (both propositional and procedural) from psychology be utilized to improve the conduct of socialization, curriculum development, teaching, and guidance. Assessment and evaluation were considered to be essential parts of all four primary functions rather than the remediation of failures, which has been the focus of psychology traditionally. Alternative formulations to avoid whatever limitations are inherent in the four functions were not ruled out. Conference participants were free to focus, in addition, on psychology's contribution to the total functioning of schools, including, especially, organizational change and the community base.

To carry out the purposes of the Conference, it was considered essential to engage two interacting groups: sensitive scholars rooted in the discipline of psychology and articulate professional educators and laymen experienced in the problems of schooling. In the context of the Conference, psychologists and educators would present and criticize each other's views and out of this interaction would emerge the creative propositions. Thus, there were invited to participate in the Conference some distinguished psychologists representing the fields of Developmental, Neuropsychology, Clinical, Social, Educational, School, and Counseling. Some experienced educators concerned with teacher training or the actual operations of schools and colleges; a philosopher of education; and some community representatives.

Among the educators were groups from institutions who had been invited to participate as both individuals and groups. The institutions represented were concerned with the training of teachers and professional psychological school personnel. They were invited to attend on the basis of the institutions' capabilities for developing experimental training models based on local interests and needs. Thus, the University of Pittsburgh was representative of institutions concerned with urban problems of education; the University of Minnesota, with underdeveloped rural areas and their educational problems; the University of Arizona, with the problems of educating Chicanos; and the different Black colleges and universities from Alabama, the educational problems of the South. The common factor among the institutional representatives were their various concerns with the preparation of teachers and other personnel for work with the disadvantaged. Some of the educators present were not directly affiliated with the institutions but were associated in the sense that they were able to implement the programs developed there.

The immediate goal of the Conference was to stimulate a dialog and discussion between and among the psychologists and educators. Papers were solicited in advance from five of the participants and critiques of the papers from five others, the Presenter-Critic Group. All the available papers were distributed to all the participants before the Conference began. Dr. Kohlberg's paper, unfortunately, was not available in its present form until after the Conference. He himself was able to attend for only one day. Had he and his paper been a more evident part of the Conference throughout, it is possible that the directions of many of the discussions might have been different. Dr. Lindsley distributed copies of his paper at the start of the Conference and, since it was essentially a written introduction to his oral presentation, no paper was submitted in answer by Dr. Scriven. Instead, he contributed the memorandum on "Training Professionals in Atheoretical Fields." Dr. Long's paper was also turned in after the Conference.

Five Presenter-Critic sessions were held at which different pairs gave statements or criticisms and general discussions followed. The three remaining group sessions consisted of one devoted to the presentations of proposed programs by the Institutional Groups, one devoted to the exploration of questions that were considered to be educationally critical, and the last to the individual evaluations of participation in the Conference. Before and after the Presenter-Critic sessions, meetings were scheduled for the Institutional Group and the Presenter-Critic Group, or the conferees divided according to their interests to discuss the focal question in relation to school functions (curriculum, teaching, guidance, and socialization).

In his paper, Dr. Kohlberg advanced his interactional view of learning that represents the marriage of Dewey's philosophy and Piaget's developmental theory of learning stages. Because of the interest expressed by the conferees, he included in his paper a section on his own work in moral development. His critic, Dr. Gattegno, opposed Piaget's ideas and advanced his own theory of education as education of awareness. Orally, Dr. Gattegno demonstrated his methods of teaching elementary arithmetic and reading.

Dr. Backman's paper contained the exposition of three ideas: the new view of intelligence as a gradually accumulated fund of skills interacting with social experience; the effects of social climate on student performance; and the consideration of the classroom as a work group with group as well as individual goals. In response, Dr. Long briefly but pointedly drew upon his personal experiences as a minority-group member to support the new view of intelligence.

Dr. Lindsley's paper and talk were parts of his total presentation. In the first, he advocated the role of teacher advisers for school psychologists; in the second, he demonstrated how the role was possible through the use of behavioral management procedures using charts and curriculum rewards. In his statement, Dr. Scriven elaborated on the kinds of hard data needed to support educational innovations such as Dr. Lindsley's.

In his paper and presentation, Dr. Pribram related current brain behavior research to the problems of education. In addition, he advanced the notion of teaching subject matter as languages, that is, as systems of codes by which internal communication—thought—is facilitated. In response, Dr. Blocher emphasized the importance of the affective dimension in education and he proposed the organization of schools around concepts of human motivation and developmental needs.

One of the points made by Dr. Sarason was the lack of a productive theory of change process. Two other points that he covered are the consequences of dealing with limited resources in the schools, and a plan for the improvement of teacher training. In response to the latter notion, Dr. Smith discussed the problems of the preservice teacher trainee and alternatives to Dr. Sarason's plan. He also discussed the need for more viable cross stimulation and synthesis among social scientists. In his oral presentation, Dr. Smith outlined his experiences in an innovative school to substantiate Dr. Sarason's views on change.

At the Institutional session, the Pittsburgh group described a tentative plan to train a new kind of school psychologist that they termed an "instructional psychologist" and who would be immersed in the problems of schools from the beginning of training. One of the innovative proposals was the clustering of groups of trainees with a faculty adviser in one school. The Southern Group called for the cooperation of the psychologists at the Conference to help institute a program to develop psychological training for education students in Alabama, perhaps through one of the cooperative programs already in existence. The plan of the Arizona Group encompassed the training of minority-group counselors in a block-teaching-team approach. The Minnesota Group described a cooperative program for teacher education that involved four systems in the state, junior colleges, the state college system, the public schools, and the University.

In the session on Questions and Answers, the group concentrated on three particular problems and their ramifications: (a) prediction-expectation-capacity; (b) providing for differences in education without stigma; and (c) why learners do not learn.

At one of its very early meetings, the Presenter-Critic group drafted a set of creative propositions (see Table of Contents). The propositions are not conclusions but statements formulated to clarify the thinking of the participants in their approaches to the central guiding question of the Conference. Starting with the first, "To date, the contribution of psychology to schooling has been negligible or harmful," the propositions go on to provoke thoughtful reconsideration of such questions as learning theories, criteria of teacher competence, the individualization of education, self-esteem in the classroom, the use of psychological measurements, and the teaching of psychology to non-professionals, among others. In sum, they are representative of the questions that arose in the different discussions over and over again.

The Conference cannot be evaluated in terms of its immediate results. More questions were raised than answered, but they are questions that are basic to the exploration of solutions for the main problem. In a sense, the Conference served to clear away some of the underbrush obscuring a clear vision of the path that must be followed to find the future relation of psychology and education. Yet the papers and presentations and discussions contain many suggestions, both implicit and explicit, that may well be the stimuli for future serious discussions on the same focal question. Certainly the dialog between psychologists and educators must continue on as many levels and in as many different places as possible if the process of schooling in America is to be changed to meet the needs of its varied clientele. Changes will not occur quickly or without additional problems. The influences of the past have their own momentum and its force must be dissipated before new ways of thinking can be accepted. But the start has been made. With the BASS survey and this Conference, psychologists and educators have started the move toward finding new ways of combining their knowledge and efforts to attain the goal of equal and maximal educational opportunity for every child.

The Conference was held from December 13-17, 1970 in the Bromwood Conference Center of Washington University, a rustic, comfortable retreat in the foothills of the Ozarks where Fall lingers late into the year. The participants were virtually isolated for the four days; there were no newspapers, television, or radio to distract them from the concerns of the Conference. All the formal sessions were recorded on audio and audio-visual tapes, a valuable record albeit a long one. The discussions in these Proceedings are edited down from the originals but every attempt was made to retain the content as well as the flavor of the exchanges. Any errors or misrepresentations of the participants' views must be attributed to the Editor.

A number of persons were responsible for helping to make the Conference an interesting and rewarding experience. With gratitude and affection, I would especially like to acknowledge the major assistance of the following individuals:

For major leadership in advancing ideas and plans for the Conference: Professors Roger Wilk and Clyde Parker.

For taking on the strenuous task of chairing the sessions and leading the discussions: Professor Clyde Parker.

For managing the Conference: Miss Karen Lundholm and Mr. Gordon Amundson.

For ideas and continuing support: Dr. Malcolm Davis.

September 1971 Maynard C. Reynolds

The Concepts of Developmental Psychology as the Central Guide to Education: Examples from Cognitive, Moral, and Psychological Education

Lawrence Kohlberg*

The potential contribution of developmental psychology to education goes far beyond the presentation of a useful bundle of facts on child behavior. The basic findings of recent developmental psychology are, in fact, revolutionary because, once understood, they redefine the school's aims and its methods for meeting these aims. The revolution however, is really Dewey's old revolution that never took place in the thirties.

A Little History

I like to think that I was given a head start in educational history at the University of Chicago, the place where all the educational revolutions began or almost began. At that time, the issue was the Hutchin's worship of the eternal Platonic ideas of Western man versus Dewey's pragmatism. Although all Chicago undergraduates learned that the truth lay with Plato and Aristotle, we were forced to read Dewey carefully. If you measure ideas of education by the standard set by Plato and Aristotle, then you know that the only modern thinker about education worth taking seriously is John Dewey.

As I became a graduate student, my interest shifted from education to clinical and child psychology, which were, in those days, dominated by Freudian thought. Somehow, however, I stumbled across Piaget who, at that time, was not part of the psychology curriculum but had been influenced by the two great American developmental psychologists who were primarily philosophers, John Dewey and James Mark Baldwin. American psychology had ignored both men but Edouard Claparède in Switzerland recognized their worth. He founded an institute of developmental psychology and pedagogy in Geneva based upon what Dewey and Baldwin called the functional-genetic approach. Claparède had a brilliant student, Piaget, to whom he turned over this institute, and Piaget developed the general premises of Dewey and Baldwin into a science of great richness and logical and empirical rigor.

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* Rochelle Mayer was the co-author of one of the earlier papers from which this one was derived and has aided in the present revision.

One of the areas in which Piaget developed the basic insights of Dewey and Baldwin was that of moral development. As a clinical psychologist, I could see the importance of the area. It seemed to me that the way clinical psychologists labeled moral development as "the superego formation" was intellectually and philosophically naive. Those same clinical psychologists who discussed with great earnestness the ethical limits of directive therapy would turn around and label similar ethical concerns in their patients as "rigid superego."

Starting with Piaget's exploratory work, I began a 15-year study of moral development and of some of its roots in Piagetian cognitive development. When, after 10 years of such work, I began discussing its implications for education, I found myself echoing John Dewey. At first it seemed that a child psychologists's bringing John Dewey to educators was carrying coals to Newcastle. To my amazement, however, it turned out that my efforts to make Dewey's ideas concrete were useful because, after 70 years, educational psychologists still had not done much to make his ideas concrete and the Dewey revolution in the schools still had not occurred. There were a number of reasons why the Dewey revolution—what Cremin (1961) called the transformation of the schools—never became a revolution or a transformation: One was that the revolution presupposed a developmental educational psychology that Dewey had laid out in broad philosophic terms but had not filled in empirically; another was that American educational psychology went a different route, that of Thorndike, and ignored the whole concept of development. Empirical psychology was of no use to the American progressive movement of the thirties, which Dewey had started, because there was no fit between educational psychology's tests and measurements, its studies of methods of teaching and learning, and the educational philosophy of John Dewey. Thorndikean educational psychology is a blind alley for educators, partly for reasons of empirical psychology, and partly because it is based on value-premises that are philosophically unsound. Piaget's work in developmental psychology forms the basis for a new kind of educational psychology, even down to tests and measurements and teaching methods, which, when integrated with the only viable philosophy of education we have—John Dewey's—offers a new meaning to schooling in America.

Three Streams of Educational Psychology

The three broad streams of educational psychology vary from generation to generation in their statements but each is continuous in that it starts from the same assumptions on psychological development. The first stream of thought, the maturationist, commences with Rousseau and is contemporarily represented in the ideas of Freud's and Gesell's followers. It holds that what is most important in the development of the child is that which comes from within him, and that the pedagogical environment should create a permissive climate to allow inner "goods" (abilities and social virtues) to unfold and the inner "bad" to come under the control of the inner good, rather than to be fixated by adult cultural pressures. Individual variations in cognitive development are inborn and cognitive development unfolds; emotional development unfolds through hereditary Freudian stages, but is believed to be vulnerable to fixation and frustration by the environment. Accordingly, the school serves as a place for the child to liberate himself and to work through aspects of emotional development that are not allowed expression at home, and to form social relations that are less dependent and conflicted than those with his parents.

The second stream of thought in educational psychology is the environmental; it can be traced from John Locke to J. B. Watson to B. F. Skinner. Environmentalists assume that what is important in the child's development is the learning of cognitive and moral knowledge and the rules of the culture; education's business is the direct instruction of such information and rules. Both specific concepts and general cognitive structures, such as the categories of space, time, and causality, are reflections of structures that exist outside the child, that is, in the physical and social world. The structure of behavior is viewed as the result of the association of discrete stimuli with one another, the child's responses, and his experiences of pleasure and pain. Cognitive development is the result of guided learning, teaching, consequently, requires first and foremost a careful statement of a behavior pattern considered desirable in terms of specific responses. Implied here is the idea that the child's behavior can be shaped by immediate repetition and elaboration of the correct response and by the use of immediate feedback or reward. Programmed texts and teaching machines are developments of the principles of environmental learning theories.

The third stream of thought, the Dewey-Piaget cognitive-developmental or interactional view, is based on the premise that the cognitive and affective structures, which education should nourish, emerge naturally from the *interaction* between the child and the environment under conditions that allow or foster such interaction. Piaget and Dewey discarded the dichotomy between maturation and environmentally-determined learning. They insisted that cognitive processes emerge through a process of development that is neither direct biological maturation nor direct learning in the usual sense but a reorganization of psychological structures resulting from organismic-environmental interactions. Therefore Dewey and Piaget assumed that the basic mental structure is the product of the patterning of the interaction between the organism and the environment, rather than a direct reflection of innate patterns or patterns of event-structure (stimulus contingencies) in the environment.

"Cognitions" are assumed to be structures, that is, internally organized wholes or systems of internal relations, and the cognitive structures provide rules for the processing of information or the connecting of events experienced. As most clearly reflected in thinking, cognition means putting things together, relating events; in cognitive theories, such relating is assumed to be an active connecting process, not a passive connection of events through external association and repetition. Changes in cognitive structures are assumed to depend upon experience. However, the effects of experience are not conceived of as learning in the ordinary sense (training, instruction, modeling, or specific response practices). If, in the child's mind, two temporally successive events are cognitively connected the implication is that he related them by means of a category such as causality, that is, he perceived his operant behavior as having caused the reinforcer to occur. A program of reinforcement does not directly change the child's causal structures because it is assimilated to it.

To contrast the three streams of educational thought, it can be said that the maturationist assumes that basic mental structure results from an innate patterning; the environmentalist learning theory assumes that basic mental structure results from the patterning or association of events in the outside world; and the cognitive-developmental assumes that the basic mental structure results from an interaction between certain organismic-structuring tendencies and the structure of the outside world, rather than reflecting either one directly. The interaction leads to cognitive stages that represent the transformations of early cognitive structures as they are applied to the external world and, in the course of the application, as they accommodate to it.

The core of the cognitive-developmental position, then, is the doctrine of cognitive stages. They have the following general characteristics (Piaget, 1960):

> 1. Stages imply distinct or qualitative differences in children's modes of thinking or of solving the same problem at different ages.
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> 2. These different modes of thought form an invariant sequence, order, or succession in individual development. While cultural factors may speed up, slow down, or stop development, they do not change its sequence.
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> 3. Each of these different and sequential modes of thought forms a "structured whole." A given stage-response on a task does not just represent a specific response determined by knowledge and familiarity with that task or tasks similar to it; rather it represents an underlying thought-organization. . . .
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> 4. Cognitive stages are hierarchical integrations. Stages form an order of increasingly differentiated and integrated *strctures* to fulfil a common function (pp. 13-15).

In other words, the basic notion of the stage concept is that a series of stages form an *invariant developmental sequence*; the sequence is invariant because each stage stems from the previous and prepares the way for the subsequent stage. Of course, children may move through these stages at varying speeds and they may be found half in and half out of a particular stage. An individual may stop at any given stage and at any age but, if he continues to progess, he must move in accord with these steps.

To understand the sequential stages, one must analyze the relation of the structure of a child's specific experience to his behavior structure. Such an analysis, termed "equilibration" rather than "learning" by Piaget (1964), uses notions such as "optimal match," "cognitive conflict," "assimilation," and "accommodation." Whatever the terms, the analysis focuses upon discrepancies between the child's action system or expectancies and the event he experiences. The hypothesis of the analysis is that some moderate or optimal degree of discrepancy constitutes the most effective experience for structural change in the organism.

The interactional conception of stages differs from the maturational in the assumption of the first that experience is essential to the stages for the shapes they take and that generally more or richer stimulation leads to faster advances through the series of stages.

A cognitive-structural component characterizes all development, including social and emotional, for Dewey and Piaget. While Piaget's own work has focused primarily on uncovering cognitive stages (especially in logico-mathematical operations), stages meeting the criteria of structural reorganization are also found in the area of social and moral values and emotions (Kohlberg, 1969). These various areas (cognitive, moral, psychosexual, motivational, etc.) are related to each other by a fundamental unity of personality organization (the ego or self), that is, the areas are united by common reference to a *single concept of self in a single social world* (Kohlberg, 1969; Loevinger, 1970).

The conception of cognitive-development presented here is very different from that which has dominated traditional educational psychology and educational practice. In the popular view, cognition or knowledge consists of skills and information that is transmitted from teachers to child and is measured by school grades and standardized achievement tests. Cognitive development so defined as school achievement has very little relation to the emotional, social, and character development of the child. Properly conceived, however, cognitive development has a predictive relation to adult character and adjustment because the maturity of active modes of thinking relates to adult adaptation and character, even if the amount of passive absorption of information and algorithms does not. More especially, where cognition is understood in developmental terms, close relations are found between cognitive development and social or character development, as work in moral development has demonstrated.

Cognitive-Developmental Psychology: Its Contribution to an Educational Ideology

I stress the relation between intellectual development and the moral side of social development because the two dimensions define the ultimate purpose of the school from a philosophic standpoint. In Dewey's day, educators generally accepted the assumption that the school had two basic functions: intellectual training and moral education. Educational thinking about moral education usually consisted of a traditional emphasis on the teaching of conventional virtues, rules, manners, and beliefs by the exercise of authority. In the 1930's, traditional moral education fell out of favor because it did not work and the whole interest of educators in character development and education stopped. Dewey presented an alternative approach to moral (and intellectual) education based upon knowledge of *developmental psychology* and *philosophic ethics* as the two form a rational integration centering on stages of development. He summarized his cognitive-developmental approach to both moral and intellectual education for teachers as follows (Dewey, 1895, in Archambault, 1964):

> . . . we may say that every teacher requires a sound knowledge of ethical and psychological principles. . . . Only psychology and ethics can take education out of the rule-of-thumb stage and elevate the school to a vital, effective institution in the *greatest of all constructions—the building of a free and powerful character.* The only solid ground of assurance that the educator is not setting up impossible or artificial aims, that he is not using ineffective and perverting methods, is a clear and definite knowledge of the normal end and focus of mental action. Only knowledge of the *order and connection of the stages in the development of the physical functions can*, negatively, guard against these evils or, positively, *insure the full maturing and free, yet orderly exercises of the psychical powers.* Education is precisely the work of *supplying the conditions* which will enable the psychical functions, as they successively arise, to mature and pass into higher functions in the freest and fullest manner. This result can be secured only by a knowledge of the process of development, that is only by a knowledge of psychology (pp. 207-208).

I suggest that some of the salient new ideas and findings on stages of development help to fulfil this promise of Dewey. Recently, we have been obtaining the more detailed knowledge of stages in the child's cognitive and moral development that make the approach concrete and practical as a guide to questions about education. Piaget's research has generated the formulation of the stages of logical development presented in Table 1. My research has resulted in the formulation of the seven culturally universal stages of moral development summarized in Table 2. A later discussion shows that definite relations exist between intellectual and moral stages.

Table I

Piaget's Eras and Stages of Logical and Cognitive Development

Era I (Age 0-2) Sensorimotor Intelligence

Stage 1—Reflex action.
2—Coordination of reflexes and sensorimotor repetition (primary circular reaction).
3—Activities to make interesting events in the environment reappear (secondary circular reaction).
4—Means/ends behavior and search for absent objects.
5—Experimental search for new means (tertiary circular reaction).
6—Use of imagery in insightful invention of new means and in recall of absent objects and events.

Era II (Age 2-5) Symbolic, Intuitive, or Prelogical Thought

Inferences carried on through images and symbols that do not maintain logical relations or invariances with one another. "Magical thinking" is the sense of (a) confusion of apparent or imagined events with real events and objects and (b) confusion of perceptual appearances of qualitative and quantitative change with actual change.

Era III (Age 6-10) Concrete Operational Thought

Inferences carried on through system of classes, relations, and quantities maintaining logically invariant properties and referring to concrete objects. Such logical processes are included as (a) lower-order classes in higher-order classes; (b) transitive seriation (recognition that if $a > b$ and $b > c$, then $a > c$); (c) logical addition and multiplication of classes and quantities; (d) conservation of number, class membership, length, and mass under apparent change.

Substage 1: Formation of stable categorical classes.
Substage 2: Formation of quantitative and numerical relations of invariance.

Era IV (Age 11 to Adulthood) Formal-Operational Thought

Inferences through logical operations upon propositions or "operations upon operations." Reasoning about reasoning. Construction of systems of all possible relations or implications. Hypothetica-deductive isolation of variables and testing of hypotheses.

Substage 1: Formation of the inverse of the reciprocal. Capacity to form negative classes (e.g., the class of all not-crows) and to see relations as simultaneously reciprocal (e.g., to understand that liquid in a U-shaped tube holds an equal level because of counterbalanced pressures).
Substage 2: Capacity to order triads of propositions or relations (e.g., to understand that if Bob is taller than Joe and Joe is shorter than Dick, then Joe is the shortest of the three).
Substage 3: True formal thought. Construction of all possible combinations of relations, systematic isolation of variables, and deductive hypothesis-testing.

Table 2
Definition of Moral Stages

I. Preconventional Level

At this level, the child is responsive to cultural rules and labels of good and bad, right or wrong, but he interprets the labels in terms of either the physical or hedonistic consequences of action (punishment, reward, exchange of favors) or the physical power of those who enunciate the rules and labels. The level is divided into the following three stages:

Stage 0: **Egocentric judgment.** The child makes judgments of good on the basis of what he likes and wants or what helps him, and bad, on the basis of what he does not like or what hurts him. He has no concept of rules or of obligations to obey or conform independent of his wish.

Stage 1: **The punishment and obedience orientation.** The physical consequences of action determine its goodness or badness regardless of the human meaning or value of these consequences. Avoidance of punishment and unquestioning deference to power are values in their own right, not in terms of respect for an underlying moral order supported by punishment and authority (the latter is Stage 4).

Stage 2: **The instrumental relativist orientation.** Right action consists of what instrumentally satisfies one's own needs and occasionally the needs of others. Human relations are viewed in terms such as those of the market place. Elements of fairness, reciprocity, and equal sharing are present, but they are always interpreted in a physical, pragmatic way. Reciprocity is a matter of "you scratch my back and I'll scratch yours," not loyalty, gratitude, or justice.

II. Conventional Level

At this level, the individual perceives the maintenance of the expectations of his family, group, or nation as valuable in its own right, regardless of immediate and obvious consequences. The attitude is not only one of *conformity* to personal expectations and social order, but of loyalty to it, of actively maintaining, supporting, and justifying the order and identifying with the persons or group involved in it. The level consists of the following two stages:

Stage 3: **The interpersonal concordance or "good boy-nice girl" orientation.** Good behavior is what pleases or helps others and is approved by them. There is much conformity to stereotypical images of what is majority or "natural" behavior. Behavior is frequently judged by intention—"he means well" becomes important for the first time. One earns approval by being "nice."

Stage 4: **The "law and order" orientation.** The individual is oriented toward authority, fixed rules, and the maintenance of the social order. Right behavior consists of doing one's duty, showing respect for authority, and maintaining the given social order for its own sake.

III. Post-Conventional, Autonomous, or Principled Level

The individual makes a clear effort to define moral values and principles that have validity and application apart from the authority of the groups or persons holding them and apart from the individual's own identification with the groups. The level has the two following stages:

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Stage 5: The social-contract legalistic orientation (generally with utilitarian overtones). Right action tends to be defined in terms of general individual rights and of standards that have been critically examined and agreed upon by the whole society. There is a clear awareness of the relativism of personal values and opinions and a corresponding emphasis upon procedural rules for reaching consensus. Aside from what is constitutionally and democratically agreed upon, right action is a matter of personal values and opinions. The result is an emphasis upon the "legal point of view," but with an additional emphasis upon the possibility of changing the law in terms of rational considerations of social utility (rather than freezing it in terms of Stage 4 "law and order"). Outside the legal realm, free agreement, and contract, is the binding element of obligation. The "official" morality of the American government and Constitution is at this stage.

Stage 6: The universal ethical-principle orientation. Right is defined by the decision of conscience in accord with self-chosen ethical principles that appeal to logical comprehensiveness, universality, and consistency. These principles are abstract and ethical (the Golden Rule, the categorical imperative); they are not concrete moral rules like the Ten Commandments. At heart, these are universal principles of justice, of the reciprocity and equality of the human rights, and of respect for the dignity of human beings as individual persons.

Both the logical and moral stages have been validated by longitudinal and cross-cultural studies, and their implications for education have been examined in a series of experimental investigations. Assuming that development does indeed pass through this natural sequence of stages, the cognitive-developmental approach defines *the aim of education as the stimulation of the next step of development,* rather than as the transmission of information (intellectual), or indoctrination into the fixed values of the school or social values (moral). Facilitating the child's movement to the next step of development involves (a) exposure to the next higher level of thought and (b) experiences of conflict in the application of his current level of thought to problematic situations. In contrast to traditional education, then, the approach stresses the following three principles:

1. Knowledge of the child's stage of functioning.
2. Arousal among children of genuine cognitive and social conflict and disagreement about problematic situations. (In contrast, traditional education has stressed adult "right answers" and reinforcing and rewarding "right answers" and "behaving well.")
3. The presentation of modes of thought one stage above the child's own.

The cognitive-developmental theory, through its stages, defines educational objectives and provides guidance for the teacher's work with the child but, more broadly, it produces a total view of the schooling process. The cognitive-development theory is an educational ideology.

There is, of course, a perennial polarity or tension in educational ideology corresponding to the polarity between the maturational and environmental-learning schools of educational psychology. Corresponding to the learning theorists are the ideologists who stress the transmission of the culture's long-established knowledge; corresponding to the maturationists are the romantics who stress the novel and personal. Thus, the traditionalists who stress the child's need to learn the discipline of the social order are opposed to the radicals who stress the child's freedom.

According to Dewey (1938), traditional educators believe that their primary task is the transmission to the present generation of the bodies of information and skills collected in the past, and that moral training consists of the formation of action patterns that conform to past standards and rules of conduct. As director of the University of Chicago Laboratory School, his approach was, of course, entirely different. Currently, "open schools" resemble somewhat Dewey's Laboratory School (Silberman, 1970).

There are, however, some basic philosophic and psychological differences between the "open school" ideology and the ideology of Dewey. Both stress experience and development but they differ on the meanings of the terms. Dewey took an interactional view. He defined interaction as the interplay of objective and internal conditions in any normal experience (Dewey, 1938). When education is conceived in these interactional terms, *true education is development,* and development is the aim of education, physical, intellectual, and moral development.

Dewey's emphasis on education as development prevents his theory of education as experience from emphasizing the immediate, the gutty, the transitory, and the personally unique. He termed "miseducative" any experience that arrests or distorts the growth of further experience. Educative experience is that that contributes fruitfully and creatively to subsequent experiences (Dewey, 1938).

Educational Psychology and Educational Ideology

The role of cognitive-developmental educational psychology should be viewed in a broader educational ideology or philosophy. An educational psychology is a statement of the processes of children's learning and development; to be converted into practice, it must be translated into a definition of what children's learning and development ought to be, into an educational ideology. Statements about what ought to be, about the ideal aims and processes of education, bring us into the fields of educational philosophy and philosophical ethics (Peters, 1966). Dewey (1938) said that every teacher requires a sound knowledge of ethical and psychological principles to take education out of the rule-of-thumb stage and to make it a vital institution in the building of free and powerful characters in children.

Before considering the relations of psychological "is" to educational "ought" as problems of ethical philosophy, however, we need to note that the issue is often not perceived as ethical or philosophical. Many educational psychologists assume that an educational ideology can be constructed from psychology alone; others, that educational ideology or practice depends upon values that are beyond the realm of rational discourse. A common position is that it is outside the competence of psychologists to speak about the aims of education. One implication of this value-neutral position is that all the psychologist can do is to present facts about learning and development to teachers with the hope that the knowledge will help them create a more effective and enlightened educational system. Very few psychologists, however, really believe that a dissemination of more research facts to teachers and educational administrators will in itself markedly improve education, and very few practicing educators want only facts from educational psychologists.

A second implication of the value-neutral position is that psychologists can go beyond stating facts to actually advising about means and methods of education but not about ends, a view that is based on a number of logical flaws (Kohlberg, 1971; Kohlberg & Turiel, 1971). Advice about means and methods involves value considerations and cannot be made purely on a basis of "facts." If immediate, concrete, positive reinforcement appears to be an effective reinforcer in studies of learning, it does not directly justify a psychologist's advising educators to use it because, in the long run, to advise about means is to advise about ends; to advise the use of concrete reinforcement is to advise that a certain kind of character, one motivated by concrete reinforcement, is the end of education. There is no valid sense in which a psychologist can give advice to educators and still be value-neutral about aims, nor is there any valid sense in which a value-neutral stance toward giving advice to an educational system whose goals are unexamined can be interpreted as an ethical act by a psychologist.

Before an educational psychologist can make a worthwhile contribution to educational practice, therefore, he must have a worthwhile conception of educational aims. Educational psychology can and should affect educational practice only through an educational ideology, a statement of what ought to be ,and not just what is. Thus, it behooves the psychologist to have a rational educational ideology. Can a rational educational ideology be generated from a scientific psychology alone?

The problem of moving from educational psychology to educational aims is the problem of the meaning of two key terms in educational psychology: development and learning. In one sense, the words are merely descriptive; in another sense, however, they are evaluative. We generally consider that it is good for the child to learn or to develop, and the educational psychologist studies processes of learning and development in children. The question is whether knowledge of what learning or development *is* allows us to prescribe what learning or development *should be*.

I claim that when development is observed and scientifically conceptualized in the cognitive-developmental manner, the knowledge of what development is can be used to construct a definition of what development ought to be. Under these conditions, development is an objectively definable good and may define valid aims of education. In other words, I am reasserting Dewey's (1938) claim that the "educative process can be identified with growth, as growing or developing, not only physically but intellectually and morally" (p. 37). Furthermore, I claim that development, as construed in terms other than those of cognitive-developmental theory, cannot be converted into a definition of educational ends. In some theories (environmental-learning), the word development is synonomous with learning. Learning, however, is not a word that denotes something necessarily worthwhile; one can learn how to be a burglar or a storm trooper. Even purely cognitive learning, such as memorizing the *World Almanac*, need not be judged as worthwhile. In other theories (maturationist), development is equated with spontaneous, individual maturation of growth, which again need not be judged as worthwhile. Growth is usually an honorific term, but cancers also grow.

The apparently spontaneous appearance of a new behavior or pattern of individuality in a child is no warrant of its value, as every parent knows. One child's "spontaneous growth" is another child's "symptom."

The Justification for Development as the Aim of Education

Concurrence with the criticism of terms like growth and learning may lead to questions of how the term development can escape the same faulting. To consider the sense in which the study of development defines ends of education, we need to consider the following questions:

1. Can we say some behavior changes are developmental and others not? If so, what criteria must be met in order to consider a behavior or function developmental? (This question is debated by Bereiter (1970) and Kohlberg (1970).)

2. In what sense does knowing that a type of behavior change is developmental make it more valuable or relevant as a focus for educational objectives?

3. In what sense is development not only a value but an ultimate educational criterion or value? What is the relation of facilitating development to promoting long-range favorable consequences for the individual's and society's life? Are ultimate development and immediate promotion and acceleration of development equivalent goals?

4. Is the goal of stimulating development feasible? Can educational experiences make a relevant contribution to development?

Webster's Seventh New Collegiate Dictionary defines the verb "develop" as "3a(1): to make active 3c: to move . . . from the original position to one providing more opportunity for effective use 4c: to cause to grow and differentiate along lines natural of its kind . . . (vi)1a: to go through a process of natural growth, differentiation, or evolution by successive changes. . . ." As this dictionary definition has been elaborated by cognitive-developmental theory, development is not just any kind of change over time, it is only change that is sequential or ordered, more differentiated, adaptive, and so forth. To call a behavior change "development" implies that it meets the following criteria:

1. The change is irreversible. Once it has occurred the change cannot be undone, forgotten, or replaced under normal conditions.
2. The change is general over a field of responses and situations.
3. The change is a change in shape, pattern, or quality of response, not merely in the frequency of its correctness according to an external criterion.
4. The change is sequential; it occurs in an invariant series of steps.
5. The change is hierarchical, that is, the later forms of response dominate or integrate the earlier forms.

When a set of behavior changes meets all these criteria, changes are termed stages or structural reorganization. Not all behavior changes of interest to educators meet these criteria; it is very unlikely, for example, that vocabulary learning is an area of structural reorganization. Not only is vocabulary learning reversible (we forget the meaning of "amanuensis"), but vocabulary changes are not qualitative; nor are they general in any structural sense (knowing the meaning of "amanuensis" has no general implications for vocabulary functioning); nor are there clear sequences in vocabulary learning (frequency and difficulty make some words attained later than others); nor is there any hierarchical dominance in the use of the responses.

In contrast, as Piaget's work on cognitive stages demonstrates, some behavior changes do meet the developmental criteria. While the behavior changes called development are labeled natural, the label does not mean that they are the inevitable result of biological maturation. In general, but not always, structural development is found in areas of response that all children display and that seem to change with age in all children, even in the absence of specific instruction. Because the experiences necessary for structual development are believed to be *universal* human experiences, it is possible for the child to develop the behavior naturally, without planned instruction. However, the fact that only about half of the adult American population fully reaches Piaget's stage of formal, operational reasoning (Langer & Kuhn, 1971) demonstrates that such development is not inevitable.

The next consideration is, what is added to our understanding of its value to label a behavioral change development? The dictionary definition suggests that the very concept of development has some value-connotations, as, for example "to move to a position providing more opportunity for effective use" (3c). What is most properly called development is a movement toward greater adaptation, differentiation, and integration. Each stage is a more differentiated, comprehensive, and integrated or equilibrated structure than its predecessor, and the fundamental cause of movement from one stage to the next is that a later stage is better, more adequate in some universal sense, than an earlier stage. Piaget's psychological theory explaining why children move from concrete to formal operations, for example, is built upon his philosophic or logical theory that formal operations permit a more adequate integration of thought patterns than concrete operations. In similar fashion, my psychological theory for explaining why children move from one moral stage to the next is built upon a philosophic or ethical theory in which each higher stage is morally and logically more adequate than the one below (Kohlberg, 1971).

Two points must be made here: First, by theoretical definition, cognitive-developmental stages represent an order of adequacy. In contrast, maturational stage theory, such as the Freudian, has no particular conceptual basis for claiming a later stage is better than an earlier one. Because anal interests mature later in time than oral interests is no reason for claiming that the anal are better than the oral. In contrast, cognitive-developmental theory postulates an order of cognitive stages based on a logical order of adequacy. The moral and social stages postulated by the theory imply the same order of logical complexity and adequacy, though more than logical complexity is involved in the difference between one moral or social stage and another.

Second, we must clarify the statement that a postulated stage sequence toward increased adequacy may be questioned as culturally relative. One basis of questioning is a matter of empirical fact as, for instance, whether the same order of stages is found in every culture or subculture. All the available evidence indicates that Piagetian logical stages and our own moral stages are found to occur in the same order in every subculture and culture studied (Yucatan, Turkey, Taiwan, Israel, Britain, and the United States; Kohlberg & Turiel, 1972). It is true that the proportions of the population reaching the most mature logical and moral stages in different cultures and subcultures differ. (If everyone in all cultures reached the highest stages, there would be little reason to view these stages as defining objectives for educational effort.) In itself, the fact that not everyone reaches the highest stage does not justify the claim that a stage order of adequacy is relative; what it may suggest is that a high level of moral or logical adequacy is not especially prized in a particular culture or subculture, which in no way contradicts an order of adequacy.

Moral adequacy or scientific truths are not established by cultural consensus nor are they invalidated by lack of complete cultural consensus. The notion that truth or ethical rightness is defined by cultural consensus, the standpoint of cultural and ethical relativity, is a notion based on logical confusions that have been clearly refuted by moral philosophers (Brandt, 1959; Kohlberg, 1971). That all men do not always act in terms of a value is no invalidation of the universality of the claim that all men *ought* always to act in accordance with it. The mere existence of a value in a culture or subculture does not in itself demonstrate its worth, nor does its absence invalidate its worth. Nazi Germany did not prize moral adequacy and its leaders often spoke and acted at the first and second stages of moral judgment—the power and obedience orientations and the instrumental egoistic orientations (Kohlberg, 1969). The fact that a nation's leadership and atmosphere are at a low level of moral development does not mean that for that nation or its members a power orientation or instrumental egoism are the most morally adequate ones.

In summary, the existence of culturally universal stages indicates the relevance of these stages to educational objectives for all humans. The actual claim that development to a higher stage is good depends not upon cultural or subcultural consensus, but upon logical and ethical argument over why a higher stage is more adequate than lower stages. Such arguments have been made by Dewey, Piaget, and Kohlberg (1971). While they have not satisfied all logicians and moral philosophers, they can only be criticized by philosophers with an equally valid definition of morality or truth that also accords with the facts of development, something no one has succeeded as yet in doing.

A coherent argument has been made for why universal developmental sequences define something of educational value, but we need now to consider why such sequences define the *ultimate* criterion of educational value, or how they relate to competing educational values. Sequential development as an aim of education implies a focus on the long-range future consequences of education for the child's development. Dewey (1938) claimed, however, that such a focus on long-range development was ultimately synonymous with an emphasis upon the quality of the child's educational experience, that education as development was education as experience, because the quality of experience is defined by the implications of the experience for future development.

Dewey's conception of educational experience as synonymous with development was based on the general tenets of cognitive-developmental psychological theory, which holds that development occurs through active *thinking*, a thinking that organizes and is part of an active doing that is both cognitive and emotional. This thinking is largely the *self-motivated* resolution of cognitive discrepancy and assimilation of novel experiences. According to the theory, one can counterpose effective rote or skill learning with the quality of the learner's experience but one cannot do so for development. Education that stimulates the child's development is not an imposition, it merely facilitates movement to the next step in the direction he is naturally going.

Cognitive-developmental theory, then, finds no competition between development and quality of experience because it equates the two. This equation can hardly be discussed precisely in light of the ambiguity of the concepts of quality of experience itself. More obviously problematic are the competitions between one universal sequence of development and another, and between *universal* sequences and sequences of an *individual* or *unique* nature. The worth of any special—individual—form of growth must be judged in terms of its impact on and relevance to general development, by its implications for further general development.

This criterion of later general development is meaningful because (as is discussed later) there appear to be universal sequences in general development that we call ego development. Considerable longitudinal study of general development is necessary, however, before particular sequences of development, even those universal to all children, can be awarded positive or negative values as educational objectives. As an example, all of Piaget's universal sequences in specific areas of cognitive development are not necessarily legitimate aims of educational stimulation. The research work necessary to justify an educational aim, however, has been suggested by Dewey: *To see whether an educational program for stimulating development in a particular area leads to later further advance in other aspects of development.* The actual empirical research required for elaborating developmental aims of education and promising leads for defining such aims coming from recent research, are presented in a later section.

Non-developmental Definitions of Educational Aims

We need now briefly to consider alternative ways of defining educational aims. The approach that comes most naturally to American educators is that embodied in the Headstart list of objectives (Grotberg, 1969) that is derived from what was called a panel of authorities on child development. The first aim, "Helping the emotional and social development of the child by encouraging self confidence, spontaniety, curiosity and self discipline" (p. 1). Now all these words sound nice, but one wonders whether promoting self-discipline and spontaneity are consistent with one another, or whether either has any favorable consequences for later development.

The strategy for defining objectives embodied in the Headstart list represents the "bag of virtues approach" to educational aims (Kohlberg & Turiel, 1971). The prototype for this strategy is the Hartshorne and May (1928-30) work on moral character. They polled psychiatrists, ministers, and others on desirable moral characteristics, and ended with a list of virtues including honesty, service, and self-control. They could have used the Boy Scout list (the Scout is clean, courteous, brave, etc.) or Aristotle's list of virtues (the good man is brave, temperate, liberal, and just). From these lists, it can be seen that everyone seems to have his own bag. Is there, or can there, be a consensus on the composition of such a list?

The problem, however, runs deeper. While it may be true that the notion of teaching virtues, such as honesty or integrity, arouses little controversy in some quarters, it is also true that a vague consensus on the goodness of these terms conceals a great deal of actual disagreement over their definitions. What is one man's "integrity" is another man's "stubborness"; one man's honesty in "expressing your true feelings" is another man's "insensitivity to the feelings of others."

Vague character traits or labels do not represent consensus; indeed they conceal a great lack of consensus about specific actions and values. The vagueness and relativity of virtue-words become apparent when, using precise experimental techniques, psychologists attempt to apply them to children in ways that predict or explain their behavior. The most definitive experimental study of children's virtue terms yet carried out was that of Hartshorne and May (1928). Focusing one part of their study on honesty, which they defined as resistance to cheating and stealing in experimental situations, they found that what people say about cheating has nothing to do with how they act; almost everyone cheats some of the time depending on what is expedient in a particular circumstance; teachers' ratings of honesty do not correlate with actual experimental measures; honest behavior is largely determined by immediate situational factors of group approval and example as opposed to internal moral values; and where honesty is determined by cultural value-forces, the values are relative or specific to the child's social class and group.

The bag of virtues used by educators usually is derived not from concepts of ethics and moral character, but from concepts of mental health and adjustment (Group for Advancement of Psychiatry, 1966). In a review of existing research literature on objective studies of mental health in children, Kohlberg, La Crosse, and Ricks (1971) concluded that mental-health virtue-words suffer from all the problems of vagueness and value-relativity just discussed for moral virtue-terms when they are applied to children's behavior, and that the composition of mental-health lists or bags is as arbitrary as those of moral-character bags. More basically, the review asked whether labeling a child as mentally healthy or disturbed predicts to later mental health or adjustment.

In other words, do preschool traits with apparent negative mental-health implications have predictive value for adult difficulties in life adjustment or mental health? The answer at present is no. Our review (Kohlberg, La Crosse, & Ricks, 1971) of adult mental-health outcomes indicated that the only early childhood variables predicting adult adjustment or mental health are IQ and family background. At the moment, there is no evidence that a psychiatrist or psychologist can pick out preschool or elementary children who will have adult mental-health or adjustment problems (aside from the few severely-retarded, brain-damaged, or autistic children). These findings suggest that in most cases children referred for treatment as emotionally disturbed are really only undergoing developmental or situational crises and developmental lags in learning and social development, which are more or less temporary. Thus, even if the kinds of behavior changes sought in programs such as Headstart were achieved, the child would be no more likely to become a well-adjusted adult than without them.

There is, however, a simple and sound core to the mental-health approach. The movement in education has used psychiatric theory and jargon to justify an underlying humane and sensible purpose—that children should have a decent time in school and that the teacher should be concerned about their adjustment, not just their school learning. Whether having a good time in school predicts to adult functioning and adjustment, it is an ethical imperative that school be reasonably pleasant for the child and that it not make him miserable; this goal can be stated stripped of its mental-health bag of virtues claims.

At first sight, translating educational objectives into a bag of virtues (skills) in the intellectual domain does not run into all the difficulties of the social-emotional domain, because first, reasonable precision has been attained in defining and measuring intellectual skills and achievements; second, there is some degree of predictability over time in these skills as grade-school performance on achievement tests predicts to high school and college performance; and third, the questions of value-relativity raised by concepts of moral character and mental health as educational objectives are not so relevant to the definition of school aims in terms of intellectual skills. No one can really question that the school should teach reading, writing, and arithmetic. How can one question defining educational ojbectives as the achievement of testable proficiency in reading, writing, and arithmetical skills? The skill concept, the notion of traits of more or less in the child, is not, I claim, the way to define the cognitive objectives of education. Schools should teach reading, writing, and arithmetic, but their goals and success in teaching these subjects should not be judged by skill or achievement tests or by teachers' gradings for proficiency.

We need to examine, then, the way in which the intellectual aims of schooling have been translated into measurable,skills, that is, into traits of achievement measured by tests of individual differences. Educational psychologists have adopted the methods of intelligence testing in which children are ranked on a normal curve around a mean, and in which mental age or grade levels are set up around such means. Based on this methodology, high scores or early age-attainment of some norm on a test is equated with desirable performance by the child and the school. This notion of skill-measurement, central to Thorndikean educational psychology, went largely unchallenged until recently. A cumulative series of the approach's failures, in terms of recent research findings, has led to recognition of the logical flaws underlying the standardized achievement-testing movement. These flaws, long recognized by developmental and progressive educators, have finally been recognized by educational psychologists of the environmental-learning and behavorial objectives school as well (Bloom, 1971; Cronbach, 1971, Gagne, 1966). As a result, there is fairly general agreement among thoughtful educational psychologists that the usual standardized tests of achievement should be scrapped as serious criteria of educational progress.

The first set of findings highlighting these flaws came from the massive Coleman Report (1966) and indicated that variation in achievement-test scores have little to do with quality of schooling (measured in various ways) and much to do with the child's social-class,ethnic, and family background, and with his general level of intelligence or cognitive development. Let us deal first with general intelligence, a major determinant of achievement-test performance. Scores on achievement tests correlate with IQ and both measures predict later school achievement. Early elementary-school IQ predicts later achievement but early elementary-school achievement does not predict later IQ, nor does it predict later achievement any better than early IQ. In other words, bright kids learn faster what they are taught in school but the learning, as measured by achievement tests, does not make them brighter.

The two logical flaws in achievement tests are first, they ignore general and natural cognitive development. They do not systematically consider cognitive development in relation to achievement-test conceptions but, instead, treat it as an extraneous factor, despite the fact that cognitive development determines most of the variance in achievement tests. The second logical flaw is the notion of marking on a normal curve around an arbitrary mean. These fallacies are pinpointed by Bloom (1971).

The logical flaws in achievement tests are even more clearly pinpointed by the relations between achievement tests and social-class background. Schools have tended to use middle-class characteristics as the normative standard of the good or educationally significant and to regard deviations from this norm as deficits to be eliminated through compensatory education. The practice is usually justified by the observation that middle-class elementary-school children tend to become successful high-school and college students who, in turn, tend to become self-supporting "successful" citizens. The same prognosis does not hold for school-age children with lower-class backgrounds. Thus it is supposed that the causal factors reside in those traits where large mean differences are found between lower- and middle-class preschoolers.

The first objection to this rationale, obviously, is that it assumes a value bias based on an arbitrary class bag of virtues. In fact, class-comparison research yields only class differences, which cannot automatically be considered deficits. Many of the differences may be purely culture-relative without adaptive significance for development, adjustment, or success.

When we move from postulating class differences as deficits or virtues to the use of supporting longitudinal evidence, we move into a third strategy of defining school objectives—the industrial psychology rationale. Differences between children of lower-class and middle-class backgrounds, such as the dialect spoken by a lower-class black, do not automatically validate them as deficits that require correction. By an industrial psychology rationale, however, we might still find a reason for trying to eliminate the differences. Suppose that longitudinal prediction shows that the black who speaks dialect meets with later job failure, perhaps because employers are illogical and prejudiced, but still the dialect predicts to failure. Thus, while non-standard dialect is different, not defective, it may still be considered a disadvantage, a characteristic that predicts adult social and economic disability in the mainstream culture.

The industrial psychologist attempts to isolate the characteristics of persons that will predict later success for them in the company or system. The criteria of success are based on the company's point of view. Success is promotion and good tests select job applicants who will be promoted with minimal waste. But industrial psychology also assumes that what is good for the company is good for the individual, and if he wants to make it in the system he is better off having good scores on the selection devices.

Analogous industrial psychology measures have been developed for education in the form of achievement tests. These measures succeed in selecting out elementary-school children performing well by the already existing criteria or standards of the school, and they have longitudinal prediction value as well (e.g., high-school reading achievement can be predicted by second-grade reading achievement). Achievement tests are then used to assess the effectiveness of the school experience. Proponents of this view hold that a basic cause of being disadvantaged or poor is a poor education, operationalized as (a) doing poorly on standard educational achievement tests and (b) dropping out of education somewhere before the Ph.D. They suggest that the solution to later social and economic failure is success in school.

Now when the industrial psychology approach is combined with the comparison of the disadvantaged and the advantaged you have the dominant hard-boiled approach to compensatory school aims, perhaps best exemplified in the writings of Bereiter and Engelmann (1966). Like the industrial psychologists, they move from a statement that all educational and social values are relative and arbitrary to the notion that one accepts the values of the company, the system, or the group with authority. The industrial psychologist not only accepts the arbitrary standards of the system, but he substitutes the longitudinal criteria of *prediction* of promotion for the longitudinal criteria of *causation* of later performance. Speaking dialect may not predict to later success because of its influence on social screening procedures, but it need not be a causal antecedent of some deficit in vocational or social ability or performance. Similarly, we may find that knowing the alphabet at age four predicts to or correlates with success in beginning reading without thereby justifying the conclusion that teaching a four-year-old the alphabet will make him a good reader.

From the point of view of the industrial psychology strategy, and the achievement tests based on it, the difference between causation and prediction is unimportant. We can efficiently select those who will do well in college, become successful salesmen, or become juvenile delinquents without facing the causation issue. If, however, we shift from using a test or a behavior as a selector to using it as the criterion for an educational objective, the problem is quite different. Unless a predictor of later achievement, adjustment, or development is also a causal determinant of them, it cannot be used to define educational objectives or constitute a statement of effective education. Bereiter and Engelmann (1966), of course, do not use manners or grammar but achievement tests as the basic recognized standards of knowledge transmitted by the school. And we all know that grades and achievement scores in elementary school predict to the same in high school, which predict to the same in college. However, current longitudinal studies indicate that school achievement predicts to nothing of value other than itself; it *seems* to relate to later success because it is associated with, or rides on the back of, intelligence and social class without independently contributing to life adjustment.

In terms of future job success, high-school dropouts do as well as graduates who do not attend college; high-school graduates with poor achievement scores and grades do as well as those with good scores; and college graduates with poor grades do as well as those with good grades. Similarly, for lower-class blacks and whites, poor school achievement does not predict to psychosis, criminality, or alcoholism, when early antisocial behavior is controlled. There is no direct evidence that poor schooling, as measured by years and achievement scores, will increase life adjustment or success (Combs & Cooley, 1968; Little, 1967; Robins, 1966).

The focus upon academic achievement has been criticized as (a) being based on an industrial psychology rationale with intrinsic flaws and (b) not meeting even these criteria successfully. The criticisms do not imply that schools should be unconcerned with academic learning but that there is (a) a heavy element of arbitrariness in current school objectives in academic learning and (b) the educational and testing psychology of the industrial psychology variety cannot make these objectives less arbitrary.

Achievement tests are designed to select children who perform well according to the already existing criteria or objectives of the schools. They do not help to lead to a better set of objectives. To use achievement tests to define educational aims is like using scores on the Kuder preference test as the aims of vocational high-school training. Moreover, achievement tests are based on marking on a curve, an assumption of industrial psychology that generates a self-contradiction that is highlighted by Ed Zigler's comment* that the goal of compensatory education is to have everyone in the country score above the fiftieth percentile on achievement tests. The confusion in the use of achievement tests or grades as the criteria of education resides in the failure to interpret correctly the predictive power of achievement tests (that cognitive ability and development are correlated with achievement scores does not mean that intervention to increase achievement scores will increase cognitive ability or development), and in the failure to distinguish between the evaluation of an individual's success within an arbitrary system with the success or worth of the system itself. If psychology and testing are to help education, it will not be by creating tests designed to predict relative success within the arbitrary framework of the historically-determined demands of a particular school system.

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*Personal communication.

In criticizing the standard achievement tests of Thorndikean educational psychology, I am criticizing the current methods by which teachers and school systems grade children. The one thing that standard achievement tests successfully predict is teacher's grades. They do not relate to or predict anything useful in the child's later development except general intelligence and social-class background, factors that should be extraneous in judging educational success. As for educational objectives, it is obvious that by the end of public schooling children should have a satisfactory mastery of reading, writing, and arithmetic skills. The goal does not mean that the mastery of these skills above a certain level is an important educational goal, nor does it mean that the level should be attained early. The outstanding successes in teaching disadvantaged persons to read and write have been achieved in adult literacy programs, not in early education programs; adult illiterates understand the need for literacy and have the cognitive and attentional skills to readily master reading. The invocation of this finding is not an argument for the postponement of reading education but an argument for teaching reading and arithmetic in ways that lead to feelings of success and mastery. Omar Moore (1968), Caleb Gattegno, Montessori, and others have developed unconventional methods of teaching the three r's to young, disadvantaged (or middle-class) children that often lead to mastery and enjoyment. The three r's depend upon large amounts of general intelligence or cognitive maturity and well-developed dispositions toward attention and self-control. If conventional teaching methods are used, it is better to proceed later and more slowly, pacing to the slower members of the class; in the long run, the process leads to a maximum level of mastery for the entire population, as has been found in experiments in Austria and Israel (Feitelson, 1968).

Developmental Definitions of Educational Aims—Cognitive Stage Development

We need now to apply the logic of the developmental definition of educational ends to the known facts of development, first in terms of pure cognitive development and then of cognitive-social development, and we must be more concrete about their nature. I shall draw upon my own research to do so.

In most sophisticated discussions, stages are viewed as more or less useful theoretical fictions. Stages have been described by Freud, Erikson, Gesell, and Piaget. All stages may be more or less useful abstractions from the developmental process; they certainly cannot all be true or real, and perhaps it is useless to expect any to be. Flying in the face of such logical sophistication, I have engaged in a program of research designed to show that cognitive stages are real structures to be found in development (Kohlberg, 1966). How can such a study show that cognitive stages are real? Needless to say we have been able to reproduce the age-differential responses to our tasks that Piaget observed and called stages, though at slightly earlier ages than he reported. To say that these responses represent cognitive stages, however, implies more.

> (1) It implies first, that young children's responses represent not mere ignorance or error but rather a spontaneous manner of thinking about the world that is qualitatively different from the way we adults think, and yet has a structure or logic of its own.
>
> (2) Second, the notion of different developmental structures of thought implies consistency of level of response from task to task. If a child's response represents a general structure rather than a specific learning, then the child should demonstrate the same relative structural levels in a variety of tasks.
>
> (3) Third, the concept of stage implies an invariance of sequence in development, a regularity of stepwise progression regardless of cultural teaching or circumstance. Cultural teaching and experience can speed up or slow down development but it cannot change its order or sequence (Kohlberg, 1966, pp. 5-6).

I tried to show the empirical meaning of these criteria in the two tasks designed to explore children's orientations to reality. The first assessed the children's conceptions of their dreams, how they experience them, why they are so disturbed by nightmares. When the child wakes up, what kind of an experience does he think his dream has been?

According to Piaget, the young child of two or three thinks of dreams as sets of real events. He generally fails to differentiate the subjective from objective components of his experience, a failure that Piaget termed "realism." The child confuses thoughts with things and symbols with that for which they stand. I found that by the age of five, most American middle-class children recognize that dreams are not real events—the first step of development in children's beliefs about dreams. By age six, the children recognize that the dreams cannot be seen by others, that they take place inside them, which is the second developmental step. The third step occurs at about age seven when the children are clearly aware that their dreams are thoughts caused by themselves.

In this or any other aspect of cognitive development, a technical question of great importance is whether the steps form an invariant order or sequence of development. The importance becomes apparent when we ask, "How does a child move from viewing dreams as real to viewing them as subjective or mental?" A simple answer is that the older child has learned the cultural definitions of the words dream and real; he has been frequently told by his parents that dreams are not real, that they are in his mind, and that he should not be disturbed by them. If verbal learning is the answer, why then do children not learn Step 3 at the same time that they learn Step 1? That the invariant sequence is the result of development and not of learning can be demonstrated by the evidence that only 18 of the 90 children studied did not fit the pattern of development, that is, all but 18 of the children who passed a more difficult step in the sequence also passed all the easier ones (Kohlberg, 1966, p. 7).

Another demonstration of the invariance of the sequence as the result of development and not of learning, is demonstrated by a comparison of the results of this study with comparable data that I collected among the Atayal, a Malaysian aboriginal group in Formosa. Like many preliterate peoples, the Atayal believe that dreams are real. Nevertheless, the youngest Atayal boys responded much like the youngest American boys. Despite the adult beliefs, they seemed to develop toward a subjective conception of dreams through much the same steps as American children, although more slowly, until the age of about 11. At that age, the boys and young men seem first to learn the adult culture's view of the dream and they regress to their own earliest modes of belief. In other words, the boys went through the invariant stages until they were forced to regress by cultural indoctrination.

To what, then, do notions of the real and unreal correspond to in the way of action? The answer requires a more concrete situation than consideration of dream concepts. Using a notion of Piaget's related to appearance—reality or subjective-objective distinction—it would seem that one of the major results of the differentiation of subjective and objective is the construction of a world of permanent, unchanging objects. To the very young infant—under 10 months—things that change in appearance change in reality. By 18 months, objects exist permanently for him even if he cannot see them, and by six years of age, he sees physical dimensions and identity as unchangeable.

We put a mask of a small fierce dog on a live and well-trained cat to study children's constancy reactions. Three- and four-year olds tended to say the animal was now a dog; six-year-olds were firmly aware of what was going on as were many of the five-year-olds. Some of the five-year-olds, however, could not make up their minds. In general, the children's behavior toward the animal corresponded to what they considered it. Only those who called it a dog refused to pet the animal and were generally fearful.

Such evidence of the reality of early cognitive stages has implications for education. For the maturationists, early education has been a time to nurture the child's lack of differentiation of appearance from reality as a source of imagination, creativity, and self-expression. The limitations of this approach can be dramatized by an event in a first-grade science program. The children were asked to discuss whether a potted cactus was a plant or an animal and to give reasons for their choices. All the children but one eventually agreed it was a plant because plants did not move or ingest food, and so forth. One boy insisted that the cactus was an animal disguised as a plant; whenever the animal saw someone approaching it instantly turned into a plant. Two years earlier, the same boy had answered Piaget questions in a similar spirit although without the self-enclosed systematization. His parents had tried hard to enter into his world and, with his teachers, had protected his mode of thought.

If the limitations of the maturationist approach to preschoolers' reality have been illustrated, so have the limitations of conservative approaches as well. The child's mode of thought was quite resistant to efforts to impose the cultural realities and skills of adults upon him. Neither social suppression nor an elaborate science curriculum appeared to have succeeded in bringing about the developmental transformation of his mode of thought to a more mature pattern. What is required? A new approach that recognizes that a preschooler's orientation to reality is a developmental stage that must be integrated into later stages of development, an approach that does not suppress the cognitive energies of preschool thought structures but encourages their gradual transformation into more adult forms. To put off reality until elementary school serves only to divorce the child's preschool world of the subjective from the elementary-school world of the objective. The preschool cognitive stimulation programs, therefore, must be defined in terms of the child's concepts that are to develop rather than in terms of adult concepts of the subjects—science, number, or language—that are to be taught.

Let us now turn to the formation of formal operational thought in the junior and senior high-school years. Piaget described the transformation of adolescent thought as a movement from concrete to formal logical operations. The transformation involves first, the capacity to think about thought, to operate upon logical operations, and second, the logical construction of all possibilities, that is, the awareness of the observed as only a subset of what may be logically possible. In related fashion, it implies the hypothetico-deductive attitude, the notion that a belief or proposition is not an immediate truth but a hypothesis whose truth value consists in the truth of the concrete propositions derivable from it. Related to the notion of the hypothetical is the notion of the relativity of truth and reality. Also related is the use of systematic experimentation, the manipulation of all possibilities in arriving at conclusions. Finally, the formal-operational involves the search for laws or principles covering all logical possibilities, that is, the distinction between empirical generalizations; for example, if you want a billiard ball to go to the left, hit it on the right side; and laws, the angle of incidence equals the angle of reflection.

With regard to solving social problems primarily of fact, Peel (1967) described the shift as one from *description* to *explanation*. The principles involved are,

1. considering all possibilities in explaining an event;
2. developing hypotheses and deducing implications from them rather than inducing generalizations; and
3. eliminating alternatives; using evidence to support a hypothesis only when it does not support an alternative hypothesis.

As an example, adolescents read the following case:

> Only brave pilots are allowed to fly over high mountains. This summer a fighter pilot flying over the Alps collided with an aerial cable-way, and cut a main cable causing some cars to fall to the glacier below. Several people were killed and many others had to spend the night suspended above the glacier (Peel, 1967, p. 489).

They were then asked

(a) What do you think about the event?
(b) Was the pilot a careful airman?
(c) Why do you think so?

Formal operational children answered the questions as follows:

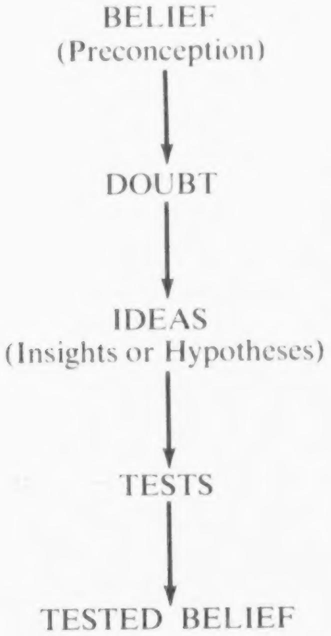
> He was either not informed of the mountain railway on his route or he was flying too low also his flying compass may have been affected by something before or after take-off setting him off course causing collision with the cable.

Children at a concrete operational level answered,

> I think that the pilot was not very good at flying and also not fit for doing it. He would have been far better off if he went on with fighting.
>
> The people must also be brave to stay the night suspended above the glacier. The pilot must be not only brave but a good driver.

These stages are important to educators because the reasoning illustrated is a focus of concern in the new physics and the new social studies curricula. Hunt and Metcalf (1968), for example, have advocated a program that centers on the teaching of *method of thinking* through the *discussion of controversial cases or issues*. They call the method of thinking reflective. In their approach, topics that typical social-studies curricula are unwilling to investigate, closed areas, are studied. Among these closed areas were issues raised by (a) the economic system, (b) race and minority-group relations, (c) social class, (d) sex, courtship, and marriage, (e) religion and morality, and (f) nationalism, patriotism, and national institutions. Students were encouraged to investigate and talk about the various questions raised. They might be asked, "Would it be a good idea to quit teaching children that 'everyone should get ahead'? What alternatives are there to the goal of 'getting ahead'? What should be the effects on our nation if people generally ceased to pursue wealth and social position?"

This reflective method approach is explicitly derived from John Dewey (1933). Hunt and Metcalf (1968) outlined their model as follows (p. 57):



The model involves the clarification of the concepts in an issue followed by an examination of the consequences of proposed actions or past actions. The examination of consequences proceeds through three phases:

> (1) an attempt to anticipate or project consequences, (2) an appraisal of consequences in terms of their goodness or badness by application of criteria, and (3) a justification of the criteria used to appraise consequences (pp. 133-34).

Thus the task for students becomes (a) predicting the probable outcome of an action by research and hypothesis-testing; (b) deciding if they like the outcome by applying their standards of what is desirable; and (c) justifying their standards of what is desirable.

When this program is considered from a psychological perspective, it seems that its objectives correspond to a natural stage of thinking, to what Piaget called the stage of formal-operational thought (also the related moral Stages 5 and 6 of principled thinking about values). That there is a correspondence between the new curriculum objectives and a stage of thought is not surprising; the correspondence is due to the fact that cognitive stages, like the new social studies, are defined by the forms of thinking, not by content. The focus of the new social studies on a rational but natural form of thinking almost necessarily implies that its objectives correspond to stimulating the development of a higher stage of reasoning.

To conceive of the new social-studies objectives as related to a stage of reasoning, then, is to imply that the task of education is first, to help stimulate the stage of thought in those not yet capable of it and second, to extend and deepen this mode of thought in those already possessing the capacity for it. This stage approach is different from, though not basically incompatible with, the assumptions of the new curriculum, which stresses the natural processes of the child's thought and problem-solving. At the same time, however, the new curriculum is aimed toward a model of a professional discipline, the disciplines of social-science inquiry or legal procedures. In contrast, I claim that the disciplinary model is an extension of a natural mode of thought—but only of thought at a given stage. Accordingly, it seems likely that the new social studies will be effective only when it catches adolescents at entry to this stage of thought.

Our example of the "pilot" question indicates that the formal-operational child spontaneously possesses the Hunt-Metcalf hypothesis-testing approach to a problem, while the concrete-operational child requires more than ordinary teaching to acquire it.

Studies indicate that less than half of high-school graduates show a capacity for formal operational reasoning (Langer & Kuhn, 1971). Furthermore, this limitation is probably not because of hereditary limitation in intellectual capacity since there is not that high a relation between psychometric brightness and formal reasoning. It seems clear that the schools could do much better jobs of stimulating formal operational reasoning than they do, a task just now being experimentally investigated.

The Relations of Cognitive Stages to the Raising of IQ as an Educational End

We need now to clarify the attainment of the stage of formal reasoning and raising the IQ as goals of intellectual education. Developmental logic requires the following research findings to support the claim that a kind of behavior forms a developmental educational aim:

1. Age-developmental change that is qualitative and sequential or at least unidirectional and cumulative.
2. Sequences that are the same for lower- and middle-class children, but through which disadvantaged children advance at a slower rate.

3. Sequences related to general cognitive maturity or intelligence.

4. Areas or traits relating at least crudely to adult adjustment apart from intelligence.

5. Traits indicating some longitudinal stability: A change in the trait through school experience should predict to ultimate adult level on the trait.

6. Modifiability of the trait through school intervention.

When we apply these developmental-aims criteria to school behavior, we arrive at a paradoxical result: The trait loosely meeting most of these criteria—general intelligence or general cognitive maturity—yields the most disappointing results. It was noted earlier that general intelligence does have some claim to defining a school educational objective, by either an industrial psychology or developmental rationale, but it has failed in one major regard: School education programs have proved to be without major long-range effects in modifying it (Kohlberg, 1968b). This failure may be explained as the result of biological components of intelligence or the effects of the psychological environment in the infant period. If the latter is stressed, we have one impulse for the day-care movement. If the raise-the-IQ-Headstart movement is transferred downward to the day-care movement, it will yield predictably equally disappointing results. Psychometric general intelligence is, to a large extent, fixed by the preschool period because of *biological* factors of heredity and perinatal and infant environment, such as the nutritional factor, rather than by early psychological environments (Kohlberg, 1968b).

It is my contention that intelligence as a school criteria has also failed because of the adoption of a non-developmental conception of intelligence. The psychometric conception is valid for many purposes but because it is not fully developmental it is not valid for guiding school cognitive intervention or measuring its effects.

Psychometric tests of general intelligence are based upon three distinct rationales. (a) The concept of a general level of cognitive development. Underlying Binet's notion of mental age, this concept was never fully developed until Piaget started his research on the qualitative-developmental components of Binet's tests, which ultimately lead to measures of stage development. (b) The concept of innate or biological cognitive capacity or potential, initially elaborated by Spearman in his tests of "g." (c) The American rationale of industrial psychology.

The industrial-psychology practical-value criterion of intelligence tests is primarily its value for selection. This standard is reflected in the use of the Binet tests for weeding-out from the classroom children who are defective or lack the capacity to profit from age-graded academic learning. Thus the British used 11+ achievement-intelligence exams for selecting out those capable of profiting from a liberal secondary education. This industrial-psychology use of the intelligence concept coincides closely with the biological-capacity theory and method of intelligence-testing (Kohlberg & DeVries 1971); it predicts school achievement and later life success, but it cannot possibly provide a basis for school educational objectives because the capacity concept of intelligence implies non-modifiability. Children can be said only to be not developing or achieving according to capacity, educational experience can bring children to capacity but cannot change it. One derives this conclusion from compensatory education IQ gains, which later wash out. No other conclusion, however, could well come out of the IQ test results, given the initial rationale and construction of IQ tests.

In contrast to the psychometric concept of intelligence, the developmental-level concept provides a standard or a set of aims for education. It does not assume a concept of a fixed capacity or intelligence quotient constant over development. In this sense, a developmental level is more like achievement than capacity, but developmental-level tests differ from achievement tests in several ways. While the developmental-level concept does not distinguish between achievement and capacity, it distinguishes between cognitive achievement (performance) and cognitive process (or competence). Developmental tests measure level of thought process, not the difficulty or correctness of thought product. They measure cognitive competence, the basic possession of a core concept, not cognitive performance—the speed and agility with which the concept is expressed or used under rigid test conditions.

Psychometric and developmental-level theories and measures of intelligence are quite different. In practice, however, the two kinds of measures are highly correlated with one another, explaining why clear, theoretical, and operational distinctions between the two concepts of intelligence have not been made until recently. Factor-analytic findings (Kohlberg & DeVries, 1971) now provide an empirical basis for this distinction. While psychometric measures of general intelligence and of primary mental abilities at mental-age six correlate with Piagetian measures of cognitive level, there is also a common factor to all developmental-level tests factorially independent of general intelligence or of any special psychometric ability. In other words, it is possible to clearly distinguish between capacity and developmental-level concepts and measures of intelligence.

Given the distinction between psychometric and developmental-level concepts of intelligence, it is clear that the latter are of more help in establishing aims and standards of education. First, the core structure defined by developmental tests is in theory and experiment more amenable to educational intervention—Piagetian theory is a theory of stage movement occurring through *experience* of structural disequilibrium (Kohlberg, 1968b). Second, Piagetian performance predicts later development independent of a fixed biological rate or capacity factor, as demonstrated by evidence of longitudinal stability or prediction independent of IQ (Kohn, in preparation). Because Piaget-items define invariant sequences, development to one stage facilitates development to the next. Third, and most important, Piagetian test content has cognitive values in its own right. If a child is able to think causally instead of magically about phenomena, his ability has cognitive value apart from arbitrary cultural demands—it is not a mere indicator of brightness like knowing the word "envelope" or "amanuensis"—which is reflected in the fact that Piaget test scores are qualitative, not arbitrary points on a curve. The capacity to engage in concrete logical reasoning is a definite attainment; being at mental age six is not. We can ask that all children reason in terms of logical operations; we cannot ask that all chidren have high IQs.

What might Piagetian intelligence measures mean in the defining of aims of education? Two related theoretical issues are critical in considering this problem: horizontal *decalage*, and the relation of intelligence to ego development. With regard to the first, Piaget distinguished between the appearance of a stage and its horizontal *decalage*, that is, its spread or generalization across the range of basic physical and social concepts and objects to which the stage potentially applies. As a simple example, concrete logic or conservation is first noted in the concept of mass and only later in weight and volume. Accordingly, acceleration of the stage of concrete operations is one educational enterprise and the encouragement of *decalage* of concrete reasoning to a new concept or phenomenon is another.

I have argued that when tests are used to define a general cognitive maturity factor distinct from "g" or mental age, the factor is primarily one of horizontal *decalage*, not of acceleration (Kohlberg & DeVries, 1971). Psychometric brightness heavily influences performance on pure tests of conservation or concrete reasoning, but it is less determinative of the application of concrete reasoning to areas of causal thinking, concepts of dreams, social identities, and so on. Therefore, the Piagetian intelligence factor represents not the child's *capacity* for logical thought, but his *possession of a logical mind*—the degree to which he has organized his experience or his world in a logical fashion.

The role of such *decalage* in future cognitive development urgently requires longitudinal study. It is likely that horizontal *decalage*, rather than age of first appearance of concrete operations, predicts to later formal operational thought. Formal reasoning develops because concrete reasoning represents a poor though partially successful strategy for solving many problems. The child who has never explored the limits of concrete logical reasoning, and lives in a world determined by arbitrary, unexplained events and forces, will see the limits of the partial solutions of concrete logic as set by intangible forces rather than by looking for a more adequate logic to deal with unexplained problems.

This discussion of Piagetian intelligence as horizontal *decalage* suggests that measures of Piagetian *decalage* are more closely tied to personality or ego development than are psychometric measures of intellectual capacity and fluency as such. The linkage may be stated in two ways: First, the Piagetian approach tests basic belief about reality rather than information or ability. In Piaget's earlier terminology, his tests gauged the child's differentiation of subjective appearance and imagination from objective reality. This orientation-to-reality aspect of Piagetian tasks is demonstrated in a study by Linden (in preparation) in which psychotic children of average psychometric intelligence were found to be grossly immature in certain Piagetian tasks.

The second way in which the bearing of Piagetian cognition upon ego development may be stated is in the relation of physical to social concepts. Our Piaget-test battery would not be considered cognitive by a teacher who had never read Piaget. Some involve moral judgment—whether a child should be punished for accidentally breaking something when his intentions were good; some involve sex and birth —whether a little girl could be a boy if she changed her hair and clothes; all, however, are tests of what Piaget called concrete, logical operations and of the differentiation of subjective experience from objective reality.

Discussing Piagetian tests in terms of horizontal *decalage* and ego development is necessary to clarify our notion that the use of cognitive stages to define educational aims does not imply the aim of acceleration of development or raising the IQ. Acceleration as such has no virtue but there is a virtue to avoiding serious retardation or fixation at a given cognitive stage. The aim is to ensure the child's optimal level of development, to ensure that ultimately he will reach a mature level of thought and action. Research suggests that adolescents and adults who have failed to develop for a number of years are more likely to become locked in or fixated at the level at which they stopped, and those who do not attain formal operations in high school and the first college years will not attain it in later adulthood. Not only is the aim that children do not become fixated at lower stages but that the child be able adequately to use the higher stages. Szeminska (1965) reported that some children attain formal operations with only incomplete usage or *decalage* of concrete operational thought. These children, she reported, become victimized by verbal abstractions to which they can give no concrete—real life—intuitive meaning. In a similar way, children may develop concrete operations without fully developing intuitive patterns of thought that rest on imagery and symbolism.

It is possible that these children have difficulty not only with creative tasks, but even in learning reading and arithmetic, which require operational forms of imagery (Szeminska, 1965). In sum, according to the cognitive-stage approach, education stimulates the elaboration and enrichment of the child's current level of thought (horizontal *decalage*) and stimulates the next level of thinking where appropriate. Its ultimate objective is a mature level of the use of reasoning that leads to consideration of a broader realm termed ego development.

Stage-Development as the Basis for Moral Education

Teachers constantly act as moral educators: They must tell children what to do, make evaluations of children's behavior, and direct children's relationships in the classroom. In these daily activities, they are usually not aware that they are engaging in moral education. When teachers are sensitive to moral education issues, they are uncertain of their functions and authority in the area. In particular, they are uncertain about whether their own moral opinions should be presented as moral truths, personal opinion, or omitted from classroom discussion entirely. Words like moral values have an honorific sound; the problem however, is to define these moral or positive values. Teachers, children, and societies have different ideas of what constitutes such values. Carr and Wellenberg (1966) cited the Ten Commandments and the Golden Rule as value systems sought by nations; they also could have used the code of the Hitler Youth or of the Communist youth as examples of the same systems, however.

The issue of the relativity of values is raised in this context because the words moral, positive, and values are interpreted by each teacher in a different way, depending upon his own values and standards. He may not be sure of universal, ethical principles to be transmitted to children, but he cannot be completely, ethically neutral either. The result is the focus of moralizing on the trivial and immediate rather than on the universal and important, because it requires less elaborate justification.

The existence of moral stages offers the educator an alternative to the arbitrary indoctrination of children with the values he happens to favor. The cognitive-developmental approach to moral development involves the stimulation of natural moral development through the universal stages. The basis of the cognitive-developmental approach is that children have their own ways of thinking and, consequently, moral education must be based on a knowledge of their stages of development. The following propositions, basic to the cognitive-developmental approach and contrary to the propositions of ethical relativity, are supported by clear research evidence:

1. We often make different decisions and yet have the same basic moral values.

2. Our values tend to originate inside ourselves as we process our social experience.

3. In every culture and subculture of the world, the same basic moral values and the same steps toward moral maturity are found. While social environments directly produce different specific beliefs (e.g., smoking is wrong; eating pork is wrong), they do not engender different basic moral principles (e.g., consider the welfare of others; treat other people equally, etc.).

4. Insofar as basic values differ, it is largely because we are at different levels of maturity in thinking about basic moral and social issues and concepts. Exposure to others more mature than ourselves helps to stimulate maturity in our own value processes. We are, however, selective in our responses to others and do not automatically incorporate the values of elders or authorities important to us.

The data supporting these propositions are based on an examination of the ways in which children make moral judgments and the transformations in their thinking that occur with increasing age. Often, teachers and parents try to instill their own morality in children without listening to the judgments the child makes on his own. If the child merely repeats a few of the adult's clichés and behaves himself, most parents, teachers, and psychologists think he has adopted or internalized their standards. When we examine a child's moral judgments, we find that many of his standards do not come in any obvious way from parents, peers, or teachers but that he has a morality of his own, that is, he thinks about right and wrong in his own organized manner.

Children often generate their own moral values and maintain them in the face of cultural training, and these values have universal roots. Every child believes it is bad to kill because regard for the lives of others or pain at death is a natural empathic response; the belief is not necessarily universal or consistently maintained, however. Another universal value tendency is a belief in reciprocity—one bad (or good) act deserves another. (At higher levels, negative reciprocity is the belief that those who infringe upon the rights of others cannot expect their own rights to be respected.)

Moral development is largely a process of restructuring universal human tendencies of empathy (concern for the welfare of others) and justice (concern for equality and reciprocity) in more adequate forms. From my research, I have been able to determine the modes of thinking that characterize moral development. They are represented by the seven culturally universal stages that were presented in Table 2. The universality of these stages is documented by findings in villages and cities in the United States, Great Britain, Taiwan, Yucatan, and Turkey. In all these cultures, the same basic moral concepts used in making moral judgments were found. Each of these basic concepts or values develops through the seven stages, as is illustrated later.

My studies show not only that the same basic moral concepts are used in every culture, but that the stages of their development are the same. Furthermore, the experimental work has demonstrated that children move through these stages one at a time and always in the same order. Developmental change means forward movement in the sequence without skipping steps. Moral reasoning of the conventional (Stages 3-4) type never occurs before the preconventional (Stages 1-2) thought has taken place. No adult in Stage 4 has gone through Stage 6, but all Stage 6 adults have gone at least through Stage 4.

To clarify the point, here is a description of the step-by-step movement of two boys in our longitudinal study (Kohlberg, 1968a) in which we were concerned with, among other things, their thinking about the value of life. The following dilemma was used:

> The drug didn't work, and there was no other treatment known to medicine which could save Heinz's wife, so the doctor knew that she had only about six months to live. She was in terrible pain, but she was so weak that a good dose of pain-killer like ether or morphine would make her die sooner. She was delirious and almost crazy with pain, and in her calm periods, she would ask the doctor to give her enough ether to kill her. She said she couldn't stand the pain and that she was going to die in a few months anyway.
>
> Should the doctor do what she asks and give her the drug that will make her die? Why?

What would constitute a mature concept of life's value? Tommy, a bright boy of 10, made judgments based on Stage 1—confusion of the value of human life with the value of material objects or powers. When he was asked, "Is it better to save the life of one important person or a lot of unimportant people?" he answered,

> All the people that aren't important because one man has just one house, maybe a lot of furniture, but a whole bunch of people have an awful lot of furniture and some of these poor people might have a lot of money and it doesn't look it.

When he moved to Stage 2 at the age of 13, he was able to distinguish between the value of material objects and the needs and wants of individuals, but then the value of life was confused with individual desires or pleasure. He said about mercy-killing,

> But the husband wouldn't want his wife to die, it's not like an animal. If a pet dies you can get along without it—it isn't something you really need. Well, you can get a new wife, but it's not really the same.

Tommy's answer is Stage 2 because, in part, the value of the woman's life is contingent on its instrumental value to her husband, who can't replace her as easily as he can a pet.

When he was 16 years old he answered the same question in the following way:

> It might be best for her, but her husband—it's a human life—not like an animal; it just doesn't have the same relationship that a human being does to a family, you can become attached to a dog, but nothing like a human you know.

Tommy then moved step by step through three stages during the 3 view based on the husband's distinctively human empathy and love for someone in his family. At Stage 3 we see the beginning of a regard for rules and conventional expectations but the thinking lacks any basis for a universal human value of the woman's life, which would hold even if she had no husband or if her husband didn't love her. Tommy then moved step by step through three stages during the ages 10 to 16. Although bright (IQ 120), he was a slow developer in moral judgment.

Let us consider the other boy, Richard, who exemplifies sequential movement through the remaining three steps. At age 13, Richard said about mercy killing, "If she requests it, it's really up to her. She is in such terrible pain, just the same as people are always putting animals out of their pain." In general, his response showed a mixture of Stage 2 and Stage 3 concepts concerning the value of life. At 16, he said, "It's not a right or privilege of man to decide who shall live and who should die. God put life into everybody on earth and you're taking away something from that person that came directly from God, . . . it's almost destroying a part of God when you kill a person." Richard displayed a Stage 4 concept of life as sacred in terms of its place in a categorical moral or religious order. The value of human life is universal but it is not an autonomous human value—it is still dependent upon something else, upon respect for God and God's authority. At this stage, moral value is defined by a conventional order that is maintained by fixed rules, laws, and authority.

While Richard confused the value of life with authority at Stage 4, he began to make these distinctions as he aged, which can be seen in his responses when he was 20.

> It's her own choice. I think there are certain rights and privileges that go along with being a human being. I am a human being and have certain desires for life and I think everybody else does too. You have a world of which you are the center, and everybody else does too and in that sense we're all equal.

Richard's response is clearly Stage 5, in that the value of life is defined in terms of equal and universal human rights in a context of relativity ("you have a world of which you are the center and in that sense we're all equal"), as well as a concern for utility or welfare consequences. At 24, Richard reached Stage 6. He answered the question so:

> A human life takes precedence over any other moral or legal value, whoever it is. A human life has inherent value whether or

> not it is valued by a particular individual. The worth of the individual human being is central where the principles of justice and love are normative for all human relationships.

At Stage 6, he conceptualized the value of human life as absolute in representing a universal and equal respect for the human being as an individual. He had moved step by step through a sequence culminating in a definition of human life as centrally valuable rather than derived from or dependent upon social or divine authority.

The need for the development of concepts about life to a principled level (Stages 5 or 6) seems abstract since personal feelings and social customs or conventions are usually sufficient motivators for respect for life. However, individuals frequently face complex moral dilemmas that are not adequately solved by conventional Stages 3 and 4 definitions of equality and the value of life. One such example is the sanctioning, by the German population, of the extermination of millions of civilians during World War II. A very recent example is the massacre of large numbers of civilians by American soldiers at the village of My Lai in South Vietnam. In an interview, the one man who refused to shoot any civilians during the massacre showed principled thinking in his reasoning about both the My Lai situation and other moral conflicts. The public statements of other soldiers involved indicated that they were at the conventional level of moral judgment; they reasoned that it was necessary to obey the order to shoot given by their commanding officers.

Many high-school students at the conventional stages felt that it was not wrong for the soldiers to kill unarmed civilians because they were ordered to do so, because they wanted vengeance for their slain buddies, and because it was done in the context of their country's war with an enemy. The students at the principled stages believed that it is wrong to kill innocent, unarmed civilians under any circumstances, even when ordered to do so by authorities; they believed that everyone has the right and the obligation to defy an order that violates a moral principle.

The studies I have conducted with associates in various cultures indicate that the stages of moral development are universal (Turiel, Kohlberg, & Edwards, 1972). At age 10, the order of use of each stage is the same as the order of its difficulty or maturity for middle-class urban boys in the United States, Taiwan, and Mexico. In the United States at age 16, the order was reversed from the highest to the lowest, except that Stage 6 was still little used (a development also from age 13 when Stage 3, the good-boy middle stage, had been most used). The results in Mexico and Taiwan were the same, except that development was a little slower. The most conspicuous feature was that at age 16, Stage 5 thinking is much more salient in the United States than in Mexico or Taiwan. Nevertheless, it is present in those countries so we know that it is not purely an American democratic construct. Similar patterns were found in two isolated villages, one in Yucatan and the other in Turkey. Conventional moral thought (Stages 3 and 4) increased steadily from age 10 to 16 but at 16 it still had not achieved a clear ascendancy over premoral thought (Stages 1 and 2), and Stages 5 and 6 were totally absent. Trends for lower-class urban groups are intermediate in rate of development between those for the middle-class and the village boys.

We also found that the sequence is not dependent on the beliefs of a particular religion or any religious beliefs at all: No significant differences appeared in the development of moral thinking among Catholics, Protestants, Jews, Buddhists, Moslems, and atheists. Children's moral values in the religious area seem to go through the same stages as their general moral values; for instance, a Stage 2 child is likely to say, "Be good to God and he'll be good to you."

In considering the issues of ethical relativity and universality, it is necessary to distinguish between the basic moral values and nonmoral values that are held by individuals or societies. For instance, an anthropoligist looking at the responses of the Taiwanese and American boys might conclude that they provided evidence for the proposition that our values are different because we come from different cultural environments. The anthropologist might point to the Taiwanese boy who said that a husband should steal a drug (that he can get no other way) to save his dying wife "because if she dies he'll have to pay for her funeral and that costs a lot." American boys did not respond this way. Tommy, when he was 10, recommended stealing the drug because "she might be an important lady like Betsy Ross, she made the flag." Recall that Tommy also said it is better to save the lives of many over one important person "because one man just has one house, but a whole bunch of people have an awful lot of furniture."

The anthropologist might say that the Taiwanese boy's thinking reflects the distinctive Chinese value of "elaborate funerals," while the American boy combines the great American values of "flag," "mother," and "possessions." From the point of view of moral development, these cultural differences in values are trivial. The basic moral reality is that all the boys reduced the value of the woman's life to concrete cash or some other material value. Such pragmatism, frequently taken as a distinctively American value-tendency, is a universal mode of moral thinking, the second stage of moral judgment.

Most observations that are used to support ethical relativism have generally been of superficial or specific values, that is to say, differences in basic moral values have been inferred from observation of differences in customs. Our studies represent a systematic cross-cultural effort and they yield a universalistic answer. If we consider general moral values, in the sense of how people make moral judgments, rather than the content of moral reasoning, we find the same forms of reasoning in every culture.

In summary, then, there are universal human modes or principles of moral thinking that progress through an invariant order. In addition, there are differences in more specific moral beliefs that are culturally or individually determined and are, therefore, relative in content. Differences that can be seen in the basic structure of moral thinking are differences in maturity or development. Accordingly, the teacher may take the stimulation of moral development as the aim of moral education. Such stimulation of development is not indoctrination; rather, it is the facilitation of the child's development through a sequence that is a natural progression for him.

Public instruction is committed to the maintenance of the rights of individuals and to the transmission of respect for individual rights. This commitment should include respect for the right to hold moral beliefs differing from those of the majority. It need not, however, include teaching respect for moral beliefs that are predicated on the denial of the rights of others (whether the beliefs are held by a majority or a minority, such as the beliefs of the American Nazis or the Ku Klux Klan).

Respect for freedom of belief does not entail value-neutrality. Consider the sense in which respect for freedom of belief limits a systematic public-school effort at moral education. Some constitutional lawyers (Ball, 1967) have argued that the Constitution, as interpreted in the Supreme Court's Schempp decision, prohibits moral education in the public schools because religion was defined as embracing "any articulated credo or value system such as 'Ethical Culture' or 'Humanism,' " and moral education can be subsumed under the latter. The notion that public moral education is a violation of the civil rights of children and parents is based on a misconception of the nature of morality, that is, that morality is a private belief system like a religion. The school, like the government itself, has the function of communicating an understanding of, and respect for, the laws of the land and of the basic human rights these laws are intended to protect. The public school is as much committed to the mainteanance of justice as are the courts. Desegregation of the schools is not only a passive recognition of the equal rights of citizens to access to a public facility, but an active recognition of the responsibility of the school for moral education, that is, for the transmission of the principles of justice on which our society is founded.

The aim of moral education as discussed here is the stepwise stimulation of development toward more mature moral judgment and reasoning, which culminate in a clear understanding of universal principles of justice, and not to develop intellectually or morally precocious children by mere acceleration. The aim is to ensure the optimal level of development in the child, to ensure that ultimately he will reach a mature level of thought and action. Our research suggests that, as with cognitive stages, those children who have failed to progress for a number of years are more likely to become locked in or fixated at the level at which they stopped. Thus, a 16-year old at Stage 2 is relatively immovable in comparison to a 10-year old at Stage 2. By remaining at a given stage of development, the children develop stronger screens or defenses against the perception of those features in their social world that do not fit their levels.

The aim of developmental moral education is to stimulate the transition to the next stage of development before the child gets locked into a lower stage. At certain age periods, such transitions are made most easily by American city children. The first is the pre-adolescent period (ages 10 to 13), when the transition from pre-conventional to conventional morality most commonly occurs. The level of morality at age 10 does not indicate the level that will be attained in adulthood, but children who do not reach a solid Stage 3 or 4 level by age 13 are unlikely to attain principled thinking in adulthood. The second transitional period appears to be late adolescence, ages 15 to 19. Our results suggest that those who do not use some (at least 20%) principled thinking by the end of high school are unlikely to develop principled thinking in adulthood.

The schools' potential for positive influence on moral development is indicated by a variety of evidence. Perhaps the most dramatic (although somewhat methodologically limited) support for the effect of a non-familial environment comes from a pilot study conducted in Israel. Disadvantaged adolescents (usually with a North African cultural background and a poor and often broken family pattern) in a kibbutz, a collective settlement, high school (Bar-Yam & Kohlberg, 1971) were compared with a control group of disadvantaged adolescents in the city, in moral judgment. A substantial proportion of the control group were still at the preconventional stages of moral judgment but none of the children who had spent their high-school years on the kibbutz were below the conventional level and some were at the principled level. The city children lived with their families; the kibbutz adolescents had little direct contact with their parents yet seemed to show moral maturation.

A series of studies by Blatt (1971; Blatt & Kohlberg, 1971) indicated that more restricted educational efforts, such as Sunday School classes, to stimulate moral development can also have a significant effect on children. These studies suggest that by the use of procedures that are little different from those available to any teacher, it is possible to raise children's moral level significantly and in a way that is sustained over time. During the next few years, attempts will be made to produce an optimal discussion curriculum for this purpose. Rather than presenting the details and procedures for such a curriculum here, I want to focus on the basic psychological principles that should be embodied in a program of moral education, principles that the teacher can apply to the spontaneous moral situations arising in the classroom.

The first principle is that education for development is not achieved through direct teaching and instruction. Our research evidence indicates that the child generates his own level of thinking and changes gradually. The task of the teacher is to facilitate the process of change. Studies (Rest, 1971; Rest, Turiel & Kohlberg, 1969) suggest that it is not possible to get children to comprehend stages much higher than their own, much less to use them spontaneously. All children were able to represent correctly all stages below their own as well as those at their own levels, and some children were able to do this for the stage directly above their own also. Almost none were able to comprehend or translate reasoning two or more stages above their own. Those children able to comprehend higher stages also showed some spontaneous use of these stages (25%) in the pretest interview. Comprehension of a higher stage, therefore, reflected the child's natural movement toward this next stage. Success in stimulating change to a higher stage requires (a) helping children to understand a higher stage of reasoning and (b) facilitating their acceptance of that reasoning as their own, with the spontaneous use of it in new situations.

In another series of studies, we found that it is only possible to induce change in a child's thinking to the stage directly above his own (Turiel, 1966). The children exposed to moral judgments at one stage above their own showed the most usage of that stage on the retest. Those exposed to reasoning one stage below their own showed some usage of that stage but they were not influenced as much as those exposed to the stage next above. The children exposed to reasoning two stages above their own were not influenced.

Since the child moves through the sequence in stepwise fashion, without skipping any stages or moving backwards, the efficacy of environmental influences depends largely upon the match between the level of reasoning presented and the child's own level. Conventional moral education has had little impact on children's moral judgments because it has disregarded the problem of developmental match and has generally involved only the attempt to transmit a set of adult moral clichés, which are often meaningless to the child because they are, at the same time, too abstract and too concrete; that is, the clichés include reasoning beyond the child's level of comprehension but are presented in a patronizing manner to the child in concrete terms beneath his level.

If moral communications are to be effective, the developmental level of the teacher's verbalizations must be one step above the level of the child. The teacher must, therefore, do much more than listen passively to the child's words, he must listen carefully for the meanings of the moral judgments made by the child. There must also be a sensitivity to differences in reasoning between the teacher and the child, as well as among different children. In sum, a knowledge of the child's thinking and level of comprehension is necessary in order to know how reasoning presented by others is being understood and assimilated.

Moral reasoning below the child's level is not very likely to be educative, in the sense of stimulating the development of his judgmental processes, nor influential on his behavior. When it is necessary to show children the wrongness of particular actions, the admonition should not be coupled with lower-level reasoning, as the child may be reinforced in his behavior because he can reject the reasoning on which the judgment is based. We can follow the process or reaction of lower-level advice right along the developmental scale. Stage 2 children tend to reject Stage 1 advice because it is fearful and foolish; Stage 3 (empathy and approval-oriented) children tend to reject Stage 2 advice (based on exchange and instrumental needs) because it is egotistical and ignores moral feelings; and Stage 4 (rules and authority-oriented) children, in turn, tend to reject Stage 3 advice because it is based on personal feelings and relationships rather than upon moral rules.

Children make active judgments about the reasoning they encounter. It should not be assumed that morality can be dictated to children solely on the basis of the authority carried by the teacher. Although the authority may have some influence, ultimately it is the reasoning contained in the communications that determines whether or not the student's moral development will be furthered. Since moral judgment cannot be taught directly, which implies that the mere presentation of reasoning at the stage above is not sufficient to stimulate change, what can the teacher do to stimulate developmental progress?

Since, with each developmental change in mode of thought the child is making a discovery on his own, new ways of moral thinking develop from within and, thus, cannot be imposed upon the child. Change is based on the child's active reorganization of his experience and is stimulated by conflicts. Therefore, the teacher's primary task is to help the child (a) focus on genuine moral conflicts; (b) think about the reasoning he uses in solving such conflicts; (c) see inconsistencies and inadequacies in his way of thinking; and (d) find means of resolving such inconsistencies and inadequacies. Indeed, our research (Turiel, 1969) indicates that if the child is challenged to perceive the contradictions in his own thinking, he will try to generate new and better solutions to moral problems. Thus, teachers' discussions must be provocative and they must deal with important issues in order to facilitate the child's experience of genuine conflict.

One of the methods we have used to induce conflict is to provide sets of statements (relevant to a given stage) that support opposite alternatives in a moral dilemma. Whatever the methods used, communications at the stage directly above the child's own stage induce the greatest conflict and are the most successful in stimulating change.

In summary, to be effective, the teacher must (a) have knowledge of the child's level of thought; (b) match the child's level by communicating at the level directly above; (c) focus on reasoning; and (d) help the child experience the type of conflict that leads to an awareness of the greater adequacy of the next stage.

The classroom discussion program is but one example of how the cognitive-developmental approach can be applied in the school. The procedures, however, should not constitute a full-fledged program of moral education but should be part of a broader, more enduring involvement of students in the social and moral functioning of the school. Morality should be a more explicit concern in the school curriculum and students should actively participate in the moral decisions of the school. Rather than attempting to inculate a predetermined and unquestioned set of values, students should be challenged with the moral issues faced by the school community: These are problems to be solved, not merely situations in which rules are to be mechanically applied. There is also a need to engage students in contemporary moral problems, such as war and civil rights. In sum, there is a need to create an atmosphere in which justice is a pervasive concern.

The Relation of Cognitive and Moral Stages

Moral judgment development may be partly interpreted as *decalage*. Research has demonstrated (Kohlberg & Turiel, 1972) that all persons who have attained a given moral stage have first attained a parallel logical stage. The parallels between the two are presented in Table 3.

The meaning of Table 3 is that logical development is a *necessary* but *not sufficient* condition for moral development. All children at an advanced level in moral judgment are at an advanced cognitive level, but the reverse is not true. A child may be cognitively advanced and yet be at a low moral stage. We have found very bright delinquent youths (as well as occasional non-delinquent youths) who are Stage 2 instrumental egoists in their moral reasoning. Although logical development is a necessary condition for moral judgment development, it is not quite correct to view moral judgment development as merely the *decalage* or spread of logical thought to a new area. Our educational procedues with a delinquent youth at a Stage 2 level of moral judgment are quite different from those involved in attempting to get a person to transfer logical thinking to a new problem (Hickey, 1972).

While moral judgment development is not mere *decalage* of cog-

Table 3

Relations Between Piaget Logical Stages and Kohlberg Moral Stages*

Logical Stage	Moral Stage	
Symbolic, intuitive thought.	**Stage 0.**	The good is what I want and like.
Concrete operations: Substage 1: Categorical classification.	**Stage 1.**	Punishment-obedience orientation.
Concrete operations: Substage 2: Reversible concrete thought.	**Stage 2.**	Instrumental hedonism and concrete reciprocity.
Formal operations: Substage 1: Relations involving the inverse of the reciprocal.	**Stage 3.**	Orientation to interpersonal relations of mutuality.
Formal operations: Substage 2.	**Stage 4.**	Maintenance of social order, fixed rules, and authority.
Formal operations: Substage 3.	**Stage 5A.**	Social contract, utilitarian law-making perspective.
	Stage 5B.	Higher law and conscience orientation.
	Stage 6.	**Universal ethical principle orientation.**

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*Attainment of the logical stages is necessary but not sufficient for attainment of the moral stage.

nitive development, the notion of encouraging *decalage* is a rough approximation of the way to think about stimulating the development of social and value concepts in the child. The development of such concepts includes his whole way of thinking about society, interpersonal relationships, and himself. The most meaningful term for such development is ego development (Loevinger, 1970), because one pole of development is the child's thoughts and feelings about himself. It has been demonstrated in both theory and research (Kohlberg, 1969) that the child's level of thinking and feeling about himself stands in a one-to-one relation to his thinking and feeling about the world, society, and other people. As a result, two large traditions of theory and research can meet—the Piaget tradition of study of the child's concepts of the world, and the self-psychology tradition of study of the child's self-concepts and attitudes. In the self-psychology tradition, stages of ego development have been proposed by many men: Erikson (1950), Fromm (1947), Sullivan (1953), Peck and Havighurst (1960), Loevinger (1970), Harvey, Hunt, and Schroeder (1961), Perry (1970), Sullivan, Grant, and Grant (1957) and Vanden Daele (1968). The way in which these stage schemes overlap and correspond to moral stages is indicated in Table 4.

Table 4

Overlap of Ego and Moral Stages

Author	Amoral	1. Fearful-Dependent	2. Opportunistic	3. Conforming to Persons	4. Conforming to Rule	5, 6. Principled Autonomous
			Moral Stage			
Kohlberg (1958)	0. Egocentric	1. Obedience and punishment-oriented	2. Instrumental egoism and exchange	3. Good-boy approval-oriented	4. Authority, rule, and social-order-oriented	5. Social contract legalistic orientation 6. Moral principle orientation
			Ego or Character Types			
Peck & Havighurst (1960)	1. amoral		2. expedient	3. conforming	4. irrational-conscientious	5. rational-altruistic
C. Sullivan, Grant & Grant (1957)	I_1 presocial	I_2 passive-demanding	I_3 conformist (exploitative)	I_3 conformist (cooperative)	I_4 authoritarian guilty	I_6 self-consistent I_7 integrative
Harvey, Hunt & Schroeder (1961)	Sub-i	1. absolutistic-evaluative	2. self-differentiating	3. empathic		4. integrated-independent
Loevinger (1966)	1. presocial	2. impulse-ridden, fearful	3. expedient	4. conformist	5. conscientious	6. autonomous 7. integrated
Vanden Daele (1968)	1. excitation-oriented	3. conflict-avoidant	5. peer and reciprocity oriented	6. social conformist	7. duty and responsibility	8. independent agent orientation 9. self-social integration

Regardless of differences in the conceptions of ego stages, a good correlation is found between measures of ego maturity based on the different schemes. As Loevinger (1970) has pointed out, all measures of ego-development will correlate, regardless of theory. Furthermore, all stages of ego development correlate with stages of moral development (Sullivan, McCullough, & Stager, 1970) because all ego-development schemes are based upon certain large regularities in the age-development of the self and social attitudes, regardless of the theoretically proposed causes of these developments.

Clear, logical, and empirical demonstrations of the relations between Piagetian stages of cognition and ego stages are provided for infant development (Decarie, 1965), preschool development (Kohlberg, 1966; 1969), and elementary school and adulthood (Vanden Daele, 1968; Kohlberg & Turiel, 1971). In general, these relations may also be said to indicate that attainment of a Piaget cognitive stage is a necessary but not sufficient condition for attainment of the parallel ego stage. All children at a given ego stage must have attained the parallel cognitive stage, but not all children at a cognitive stage will have organized their self-concepts and social experience at the corresponding ego stage.

The schemes of ego-development cited are oriented primarily to the developmental quality of thoughts and feelings about the self and the social world. Under the name of ego development also go more trait-like measures of ego-strength. One grouping of measures, under the name of cognitive-style, includes measures of analytic thinking, field independence, reflectivity (as opposed to impulsivity), and attentional quality. Another grouping derives from the notion of prudence (or the Protestant ethic), such as delay of gratification, time perspective, and achievement motivation.

All increase regularly with age in various cultural settings; all correlate with intelligence but can be distinguished from it; all are lower among disadvantaged than advantaged children; all show considerable predictability or stability over time, at least in the elementary and adolescent years (Kohlberg, LaCrosse, & Ricks 1970); and all seem more modifiable in preschool and elementary years than psychometric intelligence.

These traits of ego strength add a quantitative dimension to the qualitative steps of ego development defined by stage theory. The extent to which they will prove to tap something similar to measures of horizontal *decalage* or ego and cognitive stages remains to be determined. Findings in adolescence indicate that an individual's consistent application of the highest attained stage of moral development to verbal and behavioral situations of moral conflict is related to attention and field independence (Kohlberg & Turiel 1971). In other words, it is possible to define ego-development as the highest stage attained and ego-strength as the ability to function at one's highest stage in the face of cognitive or emotional ambiguity, novelty, and so forth.

What can a concept of ego development do to guide education? The concept has defined the aim and standard of education in what we termed the maturational tradition for the past 50 years. As usually used, however, the concept has been identified with the psychoanalytic theory of maturational, emotional stages or, more recently, with humanistic psychology or the self-realization movement, rather than with an interactional cognitive-developmental theory. In the psychoanalytic tradition, ego development has often been equated with mental health, that is, the absence of pathologic symptons and conflict, or with the ability to express one's impulses in a controlled but not overcontrolled way. The equation has led to the defining of educational aims in terms of a mental health bag of virtues that cannot withstand either logical or research test or criticism. Furthermore, it has led to an effort to transfer to the teacher the role of therapist (or substitute parent). While there is little question that the skills and sensitivities of the therapist are an asset to the teacher, the therapist model is no guide to the stimulation of development, social or intellectual.

The classic aim of therapy is to deal with the pockets of retardation or regression and repression that exist at the edges of a mature ego; if therapy moves the conscious ego to the next stage of development, it is only by dealing with hang-ups at the more retarded levels. In contrast, developmental education requires a direct focus upon upward movement of the conscious ego. Vanden Daele (1968; 1970) found that when he moved disadvantaged, preschool children to the next higher ego development stage, they also showed a 10 to 20 point IQ gain.

A focus upon a program of ego-development stimulation in high school helps to clarify the cognitive-developmental approach to education as ego development. The program (Sprinthall & Mosher, 1970) was the deliberate psychological education of adolescents through the integration of cognitive developmental and humanistic approaches, and also included some standard components of psychological education, for example, high-school courses in psychology and sensitivity training procedures. The program was an attempt to make the concept of development real to adolescents in order to enable them to see their own life careers in developmental terms, including general observational experiences about human development, such as work with younger children and adolescent self-reflection.

The core aim of Mosher and Sprinthall is developmental. They and their students are combining their approach to psychological education with our moral discussion methods and examining the effect of both on ego development and moral development (Dowell, 1971). Their undertaking is a major one and will take a long time to work out in a satisfactory way; if they are successful, they will have defined a new role for the school psychologist. Instead of waiting for referrals for diagnosis and diluted therapy, the school psychologist will teach kids what he knows—psychology—in a personally relevant way. If the kids want to talk to him individually about their problems they will do so on the basis of the way they see him think and feel in the classroom, which might form the beginning of a more viable role for the school psychologist or guidance counselor in high school.

A number of issues are raised, however, by the concept of psychological education for ego development. As elaborated by Sprinthall and Mosher (1970), it involves an integration of cognitive-developmental with humanistic psychology approaches to ego development. There are some difficulties in attempting such an integration. The humanistic psychologies of Maslow, Rogers, and others, as applied to education, differ from the cognitive-developmental in a number of important ways. Part of the contrast is suggested by the fact that the humanistic approach sometimes goes under the name of affective education. The cognitive-developmental approach stresses the cognitive reorganization of experience through successively higher levels (including emotional experience) as the basic developmental process: Education requires thinking, not just feeling. A second contrast is that humanistic education often obscures not only that emotional aspects of education are important components of the educational process, but that spontaneous emotional experience and expression are educational goods or aims in themselves. Dewey, on the other hand, believed in education as experience, in the test of the worth of present experience as "that they live fruitfully and creatively in subsequent experiences."

A related difference is the focus of humanistic psychology upon the uniquely individual as defining educational aims, as opposed to the cognitive-developmental view of the unique and immediate as elements or processes in universal progressions in human development. Accordingly, the cognitive-developmental tradition relies upon objective empirical research to define development, instead of equating development with the adolescent's sense of uniqueness.

Finally, there is a difference in philosophic perspective. The cognitive-developmental approach assumes that the postulation of values requires detailed ethical and philosophical justification; the humanistic-psychology approach sometimes tends to assume that a psychological (or phenomenological) theory can lead to a justified system of values. Terms like self-realization, self-actualization, and spontaneity are taken as good in themselves rather than as being subject to the scrutiny of moral philosophy. The "is" of psychological self-realization is equated with the "ought" of ethics, without clear logical justification. In contrast, the cognitive-developmental view holds that psychological development must be considered from the point of view of rational ethics before it can stand as a guide to values.

Self-realization is not always good from an ethical standpoint, which is why the value-laden areas of psychological education are termed moral education by the cognitive-developmental approach. In a doctoral thesis, Gilliland (1970) found that sensitivity training slightly lowered, rather than raised, moral judgment level. The T-group ideology of being creative, warm, and spontaneous is itself an ideology that tends to translate into an unconventional variant of the Boy Scout "be nice" interpersonal, conformity morality that we call Stage 3, rather than being the ideology of universal, human ethical principles that we call Stage 6. I do not mean that the humanistic bag represents a low stage but, rather, that the humanistic bag of virtues mistakes the process or means of ego development for the ultimate highest stage or end of development. Movement to a higher stage of development presupposes some openness to experience, trust, interpersonal awareness, and self-awareness. These characteristics are not themselves, however, the structure of higher stages of moral development, nor even of ego development.

The humanistic psychologist, then, unlike the cognitive-developmental educator, tends to equate the felt process of ego development with its long-range outcome in a higher structural level of thought and feeling. Furthermore, the humanistic psychologist tends to equate the content of ego development with the self, self-awareness, and identity. The other pole of ego development, however, is that of new awareness of the world and values; it is the awareness of new meanings in life. I have mentioned the moral strand of ego-development, which is clearly philosophical. Not all the meanings of life are moral, however, and not all develop as new structures of ethical and political values and principles. There are also aesthetic, religious, metaphysical, and epistemological concepts and values. In other words, one side of ego development is the structure of the self-concept and the other side is the individual's concept of the true, the good, the beautiful, and the real. If psychological education is to promote ego development, then we must use psychological education as one side of an education whose other side consists of the arts and sciences as philosophically conceived.

Put in different terms, the approach to education as ego development is to define the aims of teaching the arts and sciences in developmental terms. In this sense one basic aim of teaching high-school physics and mathematics is to stimulate the stage of principled or rational social and moral judgment. A basic aim of teaching literature is the development of a stage or level of aesthetic comprehension, expression, and judgment, as yet poorly defined by psychology but intuitively postulated as a goal by most sensitive high-school English teachers. Behind all of these developmental goals lie moral and philosophic dimensions that, under the name of the meaning of life, determine much of ego development.

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Comments on Kohlberg's Paper and on Education as Education of Awareness

Caleb Gattegno

If the bases of education must be scientific we must see to it that facts are taken care of even if a theory is almost all that is offered. Experimental work *à la Piaget* looks impressive because it is systematic and it attempts to cover much of the field philosophers allocated to epistemology, the way we know.

Under the name "cognitive psychology," a number of investigators have gathered the data that reflects how students of all ages manage to acquire some techniques, notions, and procedures, which are acknowledged by philosophers to represent the "scientific method" in various areas of science. Despite the obvious interest of these studies and their capacity to be repeated, one can show their uselessness for education with such ease that there must be some bias distorting these investigations. I find it in the double illegitimate request that we label people as functioning properly only if they function like the investigator, and that we do not look at what they are actually doing with themselves.

Still, it does not require much of an experimental sense to see that all of us, in whatever culture we grow up, must crack the code of the spoken language of our environment, and that almost all of us succeed in doing it at about age two or three. This field is not the only one we work on as babies but even if we restricted ourselves to it, we would not be able to construct a "stage wise" explanation of what we do to learn to speak, a highly intellectual activity if there is one.

Indeed—

using the *nouns* implies an awareness of classes, classification, and the elementary algebra of classes (disjunction, inclusion in a more comprehensive class, or of a more restricted class, union of complementary classes);

using the *pronouns*, an awareness of the proper substitution according to sex, number, distance, possession, etc.;

using the *adjectives*, an awareness of the many properties and attributes one must perceive in one's world (inner or outer);

using the *prepositions*, an awareness of the innumerable relations in space and time minds find around them;

using the *verbs*, awareness of how actions and states are affected by time, duration, mood, and person;

using the *adverbs*, awareness of how many modalities there are to characterize actions and states;

and so on.

One must be not only sensitive to the functions of words before one can use them properly, but one must also note the structures of statements to infer another kind of meaning that words alone do not convey. Is it a question? a condition? a supposition? a promise or a probability? a sarcasm or a mockery? a support or a denial? All these possibilities and more must be considered by paying attention to the tone of the voice and its other nonverbal qualities before we find the one that agrees with the more stable set of words; then we can interpret the statement with fewer chances of error in what can be called the context.

At the time we manage to master speech, the demands of organized language upon our minds are enormous. Yet we learn to speak in that language. It is amazing to me to find that so many students of childhood have overlooked what must certainly be assumed to be the existence of a remarkable endowment in each of us.

The set of sensitivities needed to crack the spoken language of the environment and the set of abilities needed to speak it provide a very different basis for education—early childhood education, in particular—from that suggested by the vision of children (of which Piaget's is one) as lacking all the equipment some adults find in the "scientific method." From the start, however, children know how to stress and ignore. They use this tool, for example, to abstract word from voice and word from word. Abstraction is a biological tool of survival not a cultural acquisition. Logics are awareness of what permits decisions, not only an algebra of propositions. The latter is not needed spontaneously for some time because our instruments are adequate for making sense of the universe that we are exploring in depth over a particular period of time. Once a new universe exercises its demands, we have no trouble in quickly developing the required instrument, the specialized logic, to conquer it.

Children know how to suspend judgment in the fields they have not yet explored or are barely exploring. In these instances, uncertain perceptions or daring guesses are permissible and every child does not feel slighted when he finds he is wrong. If a child is forced to answer a question in an unknown field, he resorts to any response without regard for its rightness, thus either spoiling statistics or confirming them, but without adding any insight into the functioning of his true self.

In education, where we have to meet the reality of children in their present endeavors to make sense of their world, and to provide opportunities for opening up new worlds for their exploration, the imposition of a hierarchy of values in assuming the reality of a particular set of stages of ego development may be the last thing we should encourage. Each of us is in time and consumes time to gain experience, a certainty of existence. That time is irreversible and cannot be recaptured once it is lost, imposes on our generation the demands that we find first, precisely how time is changed into various kinds of experiences, and second, that we use this knowledge as the basis for our various school activities.

Psychologists are those people who study the first demand, educators or teachers are those who apply it. Together they serve the young generation to extend its gifts and to be prepared to conquer new worlds that integrate those conquered by previous generations. Psychology can help education if it comes up with an improved set of observations and a better organization of our knowledge of how we know in the various states and at the various levels of awareness required by the universes we must go through to be an integrated self within an organized set of selves that have organized their worlds. Psychology—as the science of time, the concrete time of each life—will serve us better by transcending cultures and rediscovering them as a product of some functionings of the selves it is concerned with, than by accepting cultures as the necessary framework within which each of us has to grow. The latter study must confirm the former if both are done properly.

If we look at our awarenesses of our involvement in life, we find that, broadly speaking, we have two kinds of prolonged activities: one that covers the acquisition of skills, which may require from minutes to years, and one that covers our acquaintance of other people involved in our lives. The first activity requires that we concentrate on it and cut our self off from as many interferences as possible; the second, that we open up to the total reality of others in order to reach an understanding. While there may be stages on the road to the mastery of skills, the demands of understanding cannot be charted for they are dependent on too many items of one's personal history and, therefore, are highly individual. Understanding may follow from education of sensitivity, which, in turn, makes one capable of further understanding.

Returning to skills, it is clear that phase one of their acquisition is an introduction to what they involve or the finding out of what they are all about. Gross errors at this stage are normal; reflection on them leads to finding stepping stones from which one can move ahead. Once a sufficient number of the stepping stones has been established, phase two, in which one is more adventurous, can begin. One attempts guesses with greater confidence and with a smaller number of gross errors; one mobilizes all that is required to find in himself the organized know-how, which is triggered selectively by the perception of the field and what it contains, both analytically and synthetically. The intimacy with the selected activities in this latter phase leads to the knowledge that one now has a know-how, molded upon the demands of the overall activity, that is acknowledged as a mastered skill. The third phase is entered upon when one applies the acquired skill to either acquire new skills or extend the previous ones.

Examine a learner at any stage in his life and you will see the necessity for these three phases whenever he is concerned with a skill. Skills cover so many activities in one's life that a listing here will be superfluous. Let us look at one instrument only: our hands. They need to be educated again and again from the mastery of placing the thumbs against the other fingers, learned in one's crib, to playing an instrument as virtuosos do after years of practice. Both skills are demanding and require that we go through the same broad phases, but one takes weeks and the other, years. Both involve the whole self and cannot be achieved when distractions take one's mind away from the tasks.

Practice, not repetition, is the true concept for the ego development in skills. No two successive involvements are identical. Seen from outside, the appearance is repetition; from inside, it is a new experience integrating previous ones.

The logic of propositions is a skill and falls like all others in the three-phase passage from non-awareness to mastery. Since it is only one aspect of the logics that summarize lengthy involvements in the various levels of awareness of ourselves, and of ourselves-in-the-world, we are not all excited by it until such states emerge that allow us to make sense of the world of propositions and to find them meaningful. Piaget contended that until we are interested in this layer of the world we do not mind functioning in the way we do normally during the previous periods. But he did not see that his level of functioning is also only one of the possible levels that have future ones; he did not care to enter them, stopping at what I shall call "Piaget's intellectual level." That there are a number of levels of thinking beyond his is as clear to me as those of young children are to him. I make this statement only to stress that the duty of science is to take in all that is capable of being apprehended and not to place ceilings on people by making one theory *the* theory.

Children's spontaneous thinking is adequate for jobs they select for themselves. This behavior can be observed when the mastery of a job becomes visible, as in the case of speech. To do justice to children, and hence to all of us, means to account for the actual learning they do at their different levels of awareness and in their different involvements, which form a more correct structuring of the universe of experience that one *must* go through than the various stages placed a priori on one's path to reach one a priori mode of thought (here the logic of propositions).

There is a hierarchy of experience in time, that is, some experiences must precede a particular one: Thus, if one cannot sit, stand, walk, and climb, one would not attempt mountaineering. But there is no linear growth in awareness. The world can be entered from many sides and it is possible to offer, for instance, a variety of entries into mathematics, such as placing algebra at the beginning although historically it is a relatively recent chapter.

Ego developments depend on education and this education can be more or less founded according to the psychology it is founded on. In order to serve education best, we need a psychology of what is educable in man. This is his awareness. He handles it by himself for years until the pressures from the non-ego force him to yield and to stop growing for his own purpose, and force him to conform and lose himself.

A psychology of awareness is a study of time in the concrete. It is, as far as I know, the only one today that permits us to offer a basis for change in education that is both correct and welcomed by teachers, students, parents, and administrators. In fact, it is difficult to study *awareness without, at the same time, finding out* what is correct education, and without offering a vast curriculum for schools, which then are no longer divorced from life.

That, today, we can think and develop a "science of education" on the basis of the study of awareness, and that we can by-pass any theory of instruction that can only justify some actions, is both good news for the general public and the opening of a new era for research that can be meaningful for education in the large (Gattegno, 1970).

Is there anything else we can educate than awareness?

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Oral Presentation

L. Kohlberg

The major point that I tried to deal with in my paper—what I take this Conference to be about—is the question of recent developments in psychology that are relevant to the schools and how they change our notions of the application of psychology to education, that is, what kinds of roles it should play, and so on. When I was a student, educational psychology was a compound of clinical, learning, and industrial psychologies. School psychology was an application of the hospital clinic to the child in school; the psychology of learning was the application to children of what had been learned in laboratories from pigeons and rats; and the tests and measurements were an application of a form of industrial psychology—an idea that may offend some people.

The most startling development in psychology, at least to me, has been the growth of developmental psychology over the last 20 years (it was almost an undeveloped discipline when I was a graduate student in the early fifties), particularly cognitive development with all its implications for social, emotional, and value development. In my paper I equated, in an over-simple way, the growth of developmental psychology with the impact of Piaget, and I tried to show that John Dewey and Piaget really provide a philosophy of education that is consistent with the Piagetian developmental psychology.

Developmental psychology gives psychologists for the first time some way of getting hold of the aims of education, which has been conspicuously lacking in the psychological work in the schools; there has been a great focus on methods of teaching but no useful psychological thinking about the ends and aims of education. The clinical-psychology model gives no real picture of the aims and ends of education, only some notions of mental health that are remedial rather than positive and too distant from the curriculum to provide a viable conception of aims and ends. The testing approach leads only to the construction of the achievement test, which rigidifies and formalizes a sort of curriculum objective rather than giving us a more rational approach to curriculum objectives. In the recent boom of preschool education, we can see the first effort to apply developmental psychology to the picture of what schools ought to be in terms of their aims. Those aims are ego development. There is almost no developmental psychology in elementary and high-school education but I think it will be developed.

The original Dewey revolution in the schools was based on the concept of development. Dewey's basic notion of the purpose of the school is that it should lead to the child's development. He compared three views of the purposes of schooling: One is the transmission of culture and cultural information and values, what was then called and still is traditional education. (Whatever methods are used—programmed learning or all sorts of elegant modern techniques—their purpose is traditional if you define the aim of education as the transmission of cultural information and values.) The second, an extreme view, is the "let 'em grow" approach to education that is generally expressed as the maturational view and, as it developed in American education, clusters around a set of mental-health notions. Dewey opposed to these two a third view of education, the notion that school involves adaptive interaction between the child and the total educational environment for the purpose of, not conformity to the culture and so on, but of some kind of restructuring of the thought and interest patterns of the child. He assumed in his view that there are some universals of development that can be defined independently of the particular culture, but these universals do not emerge automatically if you only leave the child alone and meet his needs. Presupposed in this view is the idea that the school is a stimulating environment and without certain kinds of stimulation the development will not take place; it presupposes also the active child.

It seems to me that when Dewey's ideas were embodied in Progressive Education, they failed because there wasn't an adequate psychology behind them, that is, there was no clear conception of what psychological development really was in his terms. The "bag of virtues" or mental-health approach never defined development in a satisfactory way at all; it consisted of a lot of virtue labels with a vague psychiatric flavor.

Now, however, we have a rather clear picture; we have fairly clearly delineated very definite stages of sequences of development that are culturally universal, operational, and measurable. We are interested in having all children reach their optimal mental levels in which they can engage in, say, abstract principled reasoning, and to reach a principled level of moral judgment, and so forth. These well-defined stages make what used to seem mushy about the Dewey approach very clear, very definitely researchable. They are not the whole answer but they give us some bench marks for looking at things. I know that in my own area of greatest interest, moral education, where the big problem is that we don't want to mean indoctrination with particular middle-class values or whatever you want to call it of the culture at the moment, the concept of developmental stages has given us some viable, universal notions of moral values. One aspect of the work that I am doing in moral education is stimulating the development of children to be able to think about social and moral problems at the level of what I call conventional reasoning, that is, being able to understand, for instance, that there are values to oneself and to social institutions that go beyond avoiding trouble and punishment.

The recent interest in psychological education, moral education, sex education, and the like, gives us a new conception of the school and of the role of the consulting psychologist, which is actually teaching the children in the classroom rather than dealing with those who are referred to him. The exclusions from classroom teaching of the school psychologist who takes referrals, makes tests and diagnoses, and does some form of counseling and therapy, has given psychologists, I think that all of us who have had some experience with it would agree, a most ineffective role, and it is a role that drastically needs changing. One way to do it is by putting some positive content in the curriculum that draws on what counseling and school psychology have to offer, including the sensitivity to individual problems and individual defenses that a psychologist ought to have.

An adequate psychology for education is implicit in Dewey's third view, the transactional, developmental notion that what education is about is the construction of an environment in which a child interacts with people and things in a way that leads to a transformation in the structure of his thinking and judgment, and so on. There are some universal patterns of development and the higher are more adequate than the lower. This is what Dewey's notion basically was. Previously, nobody knew what these sequences of development were or how to observe and measure them. One teacher's notion of development in Dewey's tradition was really a function of her particular values, biases, and so forth, because nothing was well worked out about the conception of development involved. In the last 30 years we have begun to get some sufficiently objective notions of what we really mean by development so that in some sense they can be tested in the same way as achievement and other cultural measures or information can be tested, and we can begin to study them and see what conditions optimize development.

We have a terrible problem about what is really valuable to communicate to children once you get beyond reading, writing, and arithmetic. Can psychology help there? For developmental psychology, the answer is yes. Until now, the major impact of psychology on the schools has been through the achievement-testing procedures, which has had a tremendous influence on the schools in many ways. I think most of us would agree it has been of very questionable value to the schools because on the basis of some very loose notions of what you put in curriculum, they started putting kids on percentile points in terms of standardized tests. That kind of testing approach has had very dramatic effects on a lot of things in school policy, the way children are handled individually or in groups, and everything else. It is time we changed.

Chairman: Dr. Kohlberg has made two points: First, from developmental psychology we can deduce some universals about the way individuals develop and out of them ought to grow the aims of education; second, what those aims might be. I take it, Dr. Gattegno, from your paper that you have some differences of opinion with Dr. Kohlberg's position.

Oral Presentation

C. Gattegno

Rather than responding to Dr. Kohlberg's presentation, I prefer to discuss some ideas that are not common to the literature but that are available to me at least. I find a bridge between his position and mine in our having to make the assumption that there is a self, a person, in each of us that grows. But it isn't only ego development. Perhaps we could call it ego explicitation. I exist as a soma as well as an intelligence. My feelings are mine, my thoughts are mine, and when I speak it is not someone else who speaks; and I learn, not someone else who learns. So I represent a self that appears to follow certain patterns. For the moment, consider me as a child. If you take snapshots of me, first I am small and then I grow so much in such a time. What happens to me is that I direct my life. I direct my life until I find the obstacles of the environment—not the help of the environment, its obstacles—and if they agree with what I am doing, well and good; if they don't, sometimes I am crushed and sometimes I run away from them. So I would like to see us take into account what children bring with them when they enter school, either in first grade or in junior or senior high school.

If this view is a theory, it is also a framework for practice. I work in the classroom with teachers and children and I am concerned with what happens there and then, whatever it is. Therefore, I am tested in the classroom, not in the conference room. But I also think, because I am self-taught, that I have all my life observed the process of learning. I have learned many things; in particular, I have studied 26 languages to know what it is to learn a language; and I have studied almost everything I could put my hands on. So I have studied learning directly. I have not put out a theory, but perhaps today is an opportune time to say what it is—that the learning is by the whole of the self. My perceptions are educated as well as my feelings, my sensitivities, and my schemes for reducing elements for more economical retention. I am involved as a totality in each of my acts. Therefore, when I go back to the children, I don't look at them as if they were a sounding board or expected to respond to my stimuli. On the contrary, I look at them as people who can generate in their minds the necessary mental structures with all the dynamics that go with it so that they can own mathematics, languages, or spelling; it becomes part of them and not something they have retained by repetition. In fact, when I teach, repetition is reduced to a minimum; sometimes it is not used at all because repetition is dulling. I teach languages the silent way. I say things once and, because I say them once, the children mobilize themselves. They don't want to lose what is said once. They listen and pay attention. These techniques are extremely effective.

Now I can show you how you can make children know that to know a little is sufficient in order to know a lot, which is contrary to what we do in school where teachers want to give them items of information. I give them one central task that works, and out of that they get a great deal more. I can do the same thing working with you. I can take the mathematically illiterate among you and show them that they can become literate in half an hour. Shall I demonstrate?

All right. Let us look at all the things that we can do with our hands. Everyone of us has hands and fingers as part of his soma and the will to make the fingers fold or stretch. These sets of fingers contain very many things that we have never used. I am going to give you a very simple lesson in how you can make everyone know in his flesh, and doing it silently, the beginning of arithmetic, and learning in, say, one hour what is usually covered in a year.

I am going to ask you to play the opposite game. If I put two fingers down, you put the other fingers down and those two up. You do the opposite of what I do. You see, it's a game, a game in which you get involved. Now you have to name the set of fingers in the vulgar language of 1 to 10. It is your responsibility to name what I show and what you show. Would you know that if I fold one of my fingers I have reduced my set by one and you have increased by one? At the levels of perception and action, you are putting the two together. You do not need to remember the present set or to relate it to the one before. As we play the game, you know what opposite response to make and, by looking at your hands, you know what to say—you feel the responses in your flesh.

Let us suppose now that instead of the names 1 to 10, I give my fingers the names 10, 20, 30, to 100. I am going to fold down—to remove—one of my fingers and my friend here will give me change by raising all his fingers. His ten fingers are equivalent to one of mine, therefore his are named from 1 to 10 now. If he folds whichever fingers he wants and I fold whichever I want, although I can't fold the one I've lost in the exchange, would you not be able to get the complements in one hundred?

Suppose he folds down one finger and another friend gives him change of ten fingers. Mine are now valued at 100 each, his at 10 each, and the new friend's at one each. We now have 900, 90, and 10, a thousand. If we folded some of our fingers, would you not be able to get the complements for a thousand? And by making change and adding other friends' sets of fingers, you would be able to get the complements for 10 thousand and 100 thousand and so on.

But we don't need to do that. We can do it much simpler by merely knowing that we can transfer the same knowledge from fingers to numbers. Suppose I write on the board 10,000,000 and then ask you for the complement of 6,835,427; by remembering your finger manipulation would you not be able to give me the answer of 3,164,573? You have given me a subtraction. This way, you teach subtraction before completing the study of addition and first graders can do subtractions of "large" numbers. It is all in the flesh and the mind and we are staying at the level of the total self.

Lindsley: Then the generalization is direct experiencing, direct perception, direct involvement, and total self?

Gattegno: That is the theory. The practice is that you can get subtraction by looking. I ask only the involvement of the self in an activity that is at the level of the learner.

Long: If the manipulation of one's body or parts of it could not be used, then your theory would not hold?

Gattegno: I used to use colored rods but hands are much more abstract. The length of the rods is actual and you can perceive it; you can stop or use your eyes to follow through. Hands are much more effective.*

Blocher: Here you are generalizing: The more total involvement of the person, the more direct sensory equipment, feelings, and body contact involved in the learning process, the more effective the learning process will be.

Gattegno: I also say more. Never in our later lives do we develop such intellectual perceptions as when we learn to speak. To learn to speak is a much harder task than writing a doctoral thesis yet we do it at the age of one, and so well that it lasts us for the rest of our lives. This sensitivity to the language—the sensitivity to the function of words—which has been neglected by everybody, tells me that every child can perform at much higher levels than we have used so far. So I have no fear of asking children to work at the high level; sometimes when you see me do things you may think the first time that I am crazy, but the children respond. We have one school in New York where, after three weeks, children in the first grade who had started as non-readers this year learned to read! And they could do it because it is easy, not because they are special children.†

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* For an exposition of some of Dr. Gattegno's principles of teaching mathematics, see C. Gattegno, "Notes on a new epistemology: Teaching and education." *Mathematics Teaching*, The Bulletin of the Association of Teachers of Mathematics, No. 50, Spring 1970.

If you like, I will give you a demonstration of how I make Spanish people learn to read in Spanish. I can't make you learn the language, only read it. Except for the sounds of the vowels and consonants that I have to give you, I will use no speech.

[At the blackboard, Dr. Gattegno wrote the vowels *a, u, i, e, o,* sounding each. Using a pointer and various rhythms, he set the group to reading the vowels, singly and in various combinations. He then wrote a consonant, made a syllable, sounded it, and again with the pointer, set the group to combining the consonant and the vowels in different rhythmic groups, some of which formed words, names, and sentences.]

Chairman: Can you give us the common basis of your methods of teaching mathematics and reading?

Gattegno: Trust your perceptions. Only do what you know. Don't guess. If you do what you see, you'll be right. If you look, you see; if you see, you can trust and put down what you see. If you are a child, I take into account that you are not ignorant, that you are actually using the tools you have used for five or six years already, then I cannot lose you.

Pribram: When do the children stop using their fingers in the subtraction?

Gattegno: When they go from the actual to the virtual. They move from doing it to thinking of doing it and then to writing it. The writing is not filled with kinesthetic experience and one sees in it what one put in it. This makes it universal because it can be seen and individual because it was the equivalent of a personal experience.

Piaget only captures the adult in children, not the children in children. I never forget that we learn to speak as babies, and learning to speak is a very difficult task. We have thought that learning to speak is cognitive but that is not enough of an explanation for it requires sensitivities to the functions of the words so that you know what is a verb; and it is a verb for the good reason that it has a particular functional property that changes some meaning into the verbal medium. Speech is a miracle. It is a remarkable thing and we should not give it up, despite all the McLuhans of the world.

Blocher: What are the implications for personality development, I guess you can call it, of children learning this way versus filtering everything through the adult mind in operations that an adult deems necessary for learning?

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† The method of teaching reading is described in C. Gattegno, "The problem of reading is solved." *Harvard Educational Review*, A Special Issue on Illiteracy in America, 1970, 40:2, pp. 283-86. See also "Pop-Ups," A TV Reading Series now on 200 stations affiliated with NBC.

Gattegno: In my methods, the stress is no longer on knowledge but on knowing. There are very many ways of knowing and we have used only one in schools, that is, the teacher states something and then students retain it. Now this is no longer necessary. The teacher, like me, must be silent; she must use action only and become aware of the student's activity. And the by-product is, I give the student a newspaper and he can read. The activity is not the student, only the by-product of him. He has obtained an increase in the use of himself and knows what he is doing.

Sometimes you are asked a question about two numbers and you answer by an awareness that is a dynamic; therefore you can talk about the two numbers as it applies to all pairs of numbers, not to one. For instance, you can talk about a subdivision of a set into two disjunct sets. So if you can utter 1, 2, 3, 4, 5, 6, and 7, and I ask you to be silent alternatively, you say, 1, 3, 5, 7. It is an activity of yours and you know you have left out the other numbers. You know simultaneously the two sets, the one actualized in the sounds and the other still in your mind. So such activities provide you with the awareness that you can subdivide this set.

Scriven: It seems to me that this process would develop in the child much more awareness of himself. Much more of himself would be available for him to use and he would have the confidence to use his perceptions, intuitions, and these kinds of things.

Gattegno: That's why I asked the question at the end of my paper, "Is there anything else we can educate than awareness?"

There is not only direct experience, but experience by proxy. If you know something of life, you can read a novel and it will make sense. *You* put the life into the book. So experience by proxy is as much a part of experience as direct experience. In my demonstration of mathematics, I started with a game, and I showed that because of me you could extend it in 10 minutes in a way, perhaps, you would never have done yourself. In the reading demonstration, you couldn't invent the sounds that go with the Spanish for these sounds. I had to give them to you. But I don't give you more than what you can't invent. The rest is your doing.

Q.: How is that different from my teaching a child in my way the use of a dictionary, let us say? Let him find how he can suddenly learn in two or three minutes to locate words and their meanings, even though this organization of words is something that isn't inherent in him at all.

Gattegno: There is no difference. Learning to use a dictionary is a skill like riding a bicycle or driving a car. You have to give these. Entering a universe is a consequence. For a child to learn to use a dictionary, you have to give him a certain number of things; you have to make sure that spelling is owned by him, which means that when he evokes a word, he also evokes its shape, otherwise he can't use your dictionary.

Q.: Is there something that somehow evolves from the child? I get the feeling that to be the child's own, it must be something that comes out of himself.

Gattegno: Language is spoken by others but he does everything to own it. Language belongs to the environment; it is being used by the environment. But he reaches it and integrates it. And once it is his, he can use it as well as the others. And you cannot say you teach him to speak.

Chairman: It sounds to me that one of the things both you and Kohlberg are saying is that you have to begin where the child is and bring him from there to some place where he should be—

Gattegno:—where he could be—

Kohlberg: There is no evidence.

Chairman: —where he could be. Is that something both of you accept? But, as Dr. Gattegno looks at what Piaget has done, it seems to him that that's a transplantation of Piaget on to the child, rather than being where the child is. I would suspect Dr. Kohlberg differs with him on that point and I would like to hear his method of finding out where the child is.

Kohlberg: We have to go back to the kind of issues that Dr. Gattegno raised in his paper and his general critique of Piaget. I didn't quite understand what he was saying in that critique. He didn't question the obvious fact that anyone can go out and replicate the kind of procedures that Piaget uses with young children and find the same sequences; that he accepts. It isn't that he claims it is empirically untrue. He is saying something else about the way Piaget has approached the child, which is different from the way he approaches him.

Gattegno: I don't approach "the child" ever because there is no abstraction for me; they are children. Anyone who speaks of "the child" cannot tell me about children. I cannot accept that we are ever going to meet on your "child." Theory has provided us with an abstraction that is a projection of Piaget; when Kohlberg says you are using logical propositions, it is logic in the way Piaget uses it. As an infant, I am using a much more complex way of going about it and it makes it possible for me to learn to speak. Kohlberg wants me to replicate the ways in which Piaget functions.

Often, Piaget's abstractions about children are not true. Take his experiments on the distortion of liquid: Piaget says that young children only see height or the section of the vessel. But, if you give them a mark where they can say this is so many units or whatever, then the experiment works differently. When Piaget went into Decroly School in 1935-36, he found there that his Geneva experiments failed because these children had learned to look; they had some ideas. They were aware.

To me, awareness is the essential ingredient of learning. The infant learns to speak the language of his environment through awareness. All children who have learned to speak indicate that they can associate a system of sounds heard to a system of sounds uttered, that they can make the one-to-one correspondence and make it more precise as they go on. Children are discriminating people who know how to relate to a challenge, who suspend their judgments until they have definite data. If we meet them on these grounds, we are accepting them for what they are doing and we are not replacing them with schemas in which they are to behave according to prescribed rules. It seems to me that until we develop the complex systems that allow us to meet the complex children, we are going to be in a mess. For me, this is a job for educational psychologists: to study the reality of the growth of children on all planes. If we recognize that at the age of one children are doing a tremendous intellectual job, we cannot say that children are going to be intellectually competent at age 12 when they do propositional logic. This is a fallacy. It is an insult to what children do.

Abstraction is not what you learn through mathematics. Abstraction is simply a description of the organism's capacity to stress and ignore. To stress and ignore is a much more powerful approach to abstraction than just abstraction or gestalt background and foreground.

Discussion

Chairman: On the basis of the different developmental views presented by Drs. Kohlberg and Gattegno, what implications can we deduce from their ideas for how teachers should behave and, hence, how we should go about preparing people for the school? One way to think about the problem is to ask ourselves a series of questions: Suppose we took their ideas seriously? What difference would it make in the way we organize the schools? What difference would it make in what we put into the curriculum? What difference would it make in how we teach? (Dr. Gattegno told us something about that.) And what difference would it make in terms of the system for individualizing group instruction? The latter is something we are now beginning to focus on in education.

Sarason: The arguments of Kohlberg and Gattegno involve different conceptions of what a developing, individual organism is. I would suggest that where such conceptions have floundered it is in how they get implemented and become a part of a theory of group instruction.

We do not have a theory of instruction that is based on the fact that we are dealing with a lot of children at the same time. As a teacher, I have a group of children and I don't have a way of implementing this circumstance to allow me to do justice to the individuals. The problem of the teacher is the same one Gattegno had with this group of 40 in the mathematics demonstration. He lost some of us at the end of five seconds, some at the end of 10 seconds, and so on.

Gattegno: You never work with more than one person at a time—for that person. The teacher stands in front of a class and thinks he has a group in front of him. But the learning has to be done by each child individually; it can't be done by a class. I know when a child falls by the wayside at one stage because I get the feedback. I work with classes of 80 sometimes, which is what you have in some countries. I want everyone to do something, I give him a chance. When 20 children have gotten whatever it is, I put the rule, "Those who know, shut up!" Now I am down to 60; I do a different set.

Sarason: What are the 20 children supposed to do? That's what the teacher wants to know.

Blocher: Asking those who understand to shut up is a reversal of what happens in the many classrooms where those who understand are asked to say so, which rewards them and negatively penalizes those who do not understand. Is this strategem deliberate on your part?

Gattegno: Yes. We now use it systematically. We want to see the arms of those who are still in difficulty so that we have an indication of what to do with them. Mistakes are permissible. Teachers know that it is traumatizing to ask for perfection at once. What I do in my teachers' seminars is to make the teachers go through the same path of changes that I want them to get from their children. They can make as many mistakes as they want. They are free not to respond, to take their time, to start something, and to retract it. I am not trying to guess what goes on in the children's minds. And the teachers accept this point of view also.

Blocher: Your system is a closed loop, continuous feedback, a self-contained system, and that's an important thing for me because you are getting continuous feedback and you can adjust the sequences and the complexities of the sequences as you get that continuous feedback.

Gattegno: It is that. It is essentially wanting to be directed by the children and what they are doing. There is even feedback if they do nothing. Where I would be trespassing is to assume that nothing is coming from them, a conclusion that I am not entitled to. How can I say what they think if they don't speak? Perhaps they find me a bore! I let them give me an indication of whether they are with me or not, whether they are interested.

In one small demonstration class of 12, I had one child—Nancy—

who played all the time during the one-hour class on Monday. Everybody in the audience said, "You did nothing about Nancy." What could I do? "You could have forced her to respond." How do you force a child to respond? I did nothing. On Tuesday, Nancy did not respond again and the audience accused me of neglect. She was not learning. All I could say was that she was playing. On Wednesday, the same. But on Thursday, the one who answered all the questions, was Nancy.

I have to work on myself, improve my techniques, present things in different ways, to get the involvement of all the children. There is no lesson prepared. I prepare myself, which is very different. I am vulnerable to what goes on in the classroom and therefore I can adjust constantly to the demands of the class. I do not do anything that everybody here could not do. It is primitive.

Chairman: I infer an important statement from what you said relative to the preparation of personnel for the school. "You don't teach people how to prepare lessons. You teach them how to prepare themselves to listen to children and to respond to them."

Gattegno: There is one way of preparation that I used to use when I was preparing teachers in London. I had them for one year after their degrees and they had to learn to teach high-school mathematics. During the first week, I used to take them to the school of the deaf where they were forced to teach without words, without language, to see that teaching could take place. If you put high-school teachers in with two-and-a-half-year olds, you will see that they are completely lost. They have to think; they have to start moving. Give them a shock and do not assume that they are going to do for the children what was done for them. At the deaf school, I used to teach the children the first day to show my students that you can teach without a word. Then we would have a seminar. They would ask, why did I not use language? Obviously because the children were deaf. Did I teach anything? Yes. How did it happen? They had to do the analysis and it was very difficult for them.

Kohlberg: As far as what psychology can contribute to the training of teachers, I think that in a certain sense there are no problems about teaching methods of teaching. Teachers are very enthusiastic about picking up better methods of teaching and I am sure they could watch Gattegno and come away with enthusiasm and eagerness to learn his method. But we are talking about developmental psychology and what it can contribute to the teachers and the method is not the hard thing. The question is, how do we make teachers into something like developmental psychologists? How do we get them to understand the child's development and to define some of their aims in developmental terms, which is much more difficult than teaching methods, and which does not imply teaching method. Let me quote what I said in a recent paper about moral development because it is true for other things as well. The developmental conception demands,

> that the educator achieve some clarity in his understanding of the nature of moral development and of the appropriate methods of moral communication with children of given developmental levels. Most important, a developmental orientation implies that the teacher listens carefully to the child in moral communications and becomes concerned about the child's moral judgments (and the relation of the child's behavior to these judgments). Less important is the conformity of the child's behavior to judgments of the teacher's own. (L. Kohlberg. "Psychological view of moral education." *The Encyclopedia of Education*, in press.)

Teachers are typically concerned with their own judgments of the child's behavior, that is, whether he is good or bad in the teacher's terms. They don't have the sensitivity to proclaim that what developmental psychology should give them is the understanding of how children are thinking and how to respond in terms of the child's level. But how do you do that? One of the things that impedes a teacher—and this touches on Sarason's question—is that she is in a group setting with a million things going on every minute and she doesn't have time to worry about what any child is thinking. Any teacher who has gone out to hold a Piaget-type interview with children is immensely excited and informed. Unless she is completely deadened, because she never thought kids thought like this, she has found out something. You can do that or something else: have teachers do client-centered therapy with kids, or counseling, whatever you want to call it, which is just another technique of listening to what the child is thinking or has said. Exposure to those kinds of techniques for teachers is a very good experience for them. In other words, if you get the teacher to do a little bit of what the psychologists have typically done, it makes a lot of sense. In fact, I don't see any reason why there is anything that psychologists cannot do in education or anything that teachers cannot do, and vice versa.

That's the point I was trying to make before. Psychologists should teach classes and teachers should give Binet's and Piaget interviews and do counseling, and so on.

Sarason: The problems of teaching teachers is identical to the problem of teaching children. That raises the question, what enters into the teaching situation? For example, what is implicit in Gattegno's approach—he does not make it explicit although I am sure in his mind it is—is, "I the teacher, am a model for what I want others to be."

What comes across is that he is communicating to his students that he and they have much more in common than he has apart. He does not have a theory of how he learns and another for how they learn. What he can do, they can do. That's what he is trying to make explicit. He has a fairly good conception of how he wants them to think, not what, how.

Gattegno: I am only trying to get people out of their ruts. I do not ask them to do like me but to know that having been a student for so many years is not a preparation for teaching. Therefore, they have to start afresh. If going to school were a preparation, there would not be a generation gap. We live at different levels of consciousness and are engaged in different activities.

Nobody learns by watching the master at work. He does everything well and it is all smooth. You only learn from people who are clumsy and make mistakes. There are phases in my preparation of my students' minds. First, they have to start from scratch and they have to review their opinions constantly. Second, they have to recognize that the only way of being sure of anything is to meet obstacles and to appear to fail. This failure is not emotional failure, it is only a way of learning. All these things have to be presented explicitly. I do not give my students a theory; I put them in a situation where the shock is major and then they start quickly to think afresh.

Sarason: We put observers in classrooms for one month and they had to do nothing but mark down everytime the teacher said she didn't know. Needless to say, they practically never used the pencil. What you say is that you make explicit between you and your students what the rules of the game are going to be in this classroom. You develop a constitution, so to speak, that will govern you and your students. You make it very explicit. But the teachers that were observed made it explicit too; what they say is that a teacher knows everything or, if she doesn't know, she doesn't say it out loud. This is what I mean when I say that what we need is a theory of group instruction. It may be implicit in the minds of some people but it is never made explicit, and when it is taken over by other people they focus on the methodology and the technique rather than on that particular person's basic conception of what the nature of group learning is.

Chairman: we cut Dr. Kohlberg off a little while ago when he was saying that the way to prepare teachers is first to help them understand the developmental notions of Piaget. What we have been talking about since then, as I understand it, is that while Dr. Gattegno goes in and does the thing with all that is implicit and isn't made explicit, Dr. Kohlberg would rather start the other way around and make the whole theory very explicit before he tells teachers how to do the thing.

Kohlberg: The point is, you don't have to really teach the theory. Hopefully, what you are doing is stimulating the teacher's own development in the area in question. Take the running of moral discussion groups, which is something you do and have the teachers do. It isn't so easy to run a moral discussion group with junior-high and high-school students, at least to run it in such a way that you get real developmental changes as the result of it. One of the conditions is to put the teachers through the same process that they will be putting the children through. That is, they have to engage in moral discussions with each other and with you first. And you use the same processes with the teachers that they are going to have to use with the children.

Pribram: What are you trying to get across to the children? Is it the predilection to moral philosophy in our culture? Or do you want them to build their own morality and get it across to you? Which is another possibility. Or is it an interaction?

Scriven: He said that what you are trying to get across to them at this stage is the recognition of moral principles as such and not simply as a summary of what you want them to think.It seems to me that holding such discussions with teachers oversimplifies the task as teachers are much more homogeneous than very unlike children. Children will be all over the place.

Blocher: As I understand Kohlberg's thinking, school is a place where we try to facilitate the development of growing human beings. We set our goals in terms of the life stages and of what we know about how children develop and the particular kinds of cognitive styles in which they operate. I see his position as benign. All the ingredients are cultural. By virtue of the fact that an individual is a developing human being, certain kinds of goals that are cross cultural and independent of culture and society can be derived by studying him as a developing human being. We need to build our educational goals and schools around those givens that we obtain by studying the developing organism, not by setting abstract philosophical goals.

Kohlberg: If we take the easiest area, intellectual development, traditionally it has been looked at in terms of so-called academic achievement, that is, measured by achievement tests, which is knowledge and skill in a content area. Now developmental psychology tells us that underneath a child's knowledge of physics and chemistry as revealed by an achievement test there may or may not be the ability to reason about physical principles, to use an experimental orientation, and so on, to the solving of various problems in the physical world. One can then, to a considerable extent, define what, say, high-school physics and chemistry are about in terms of the development of something we can call either the capacity for principles of formal thinking, Piaget's term, or the use of scientific method. It turns out that it is a developmental phenomenon; some children without instruction develop the basic modes of a scientific reasoning and some children don't. For example, only about 15 percent of children in high school ever develop to the stage of what Piaget calls formal operational reasoning, that is, the ability to generate hypotheses and test them in some logical and exhaustive way against the evidence. We would say that nearly every child ought to develop it. It is within the biological capacity of everyone; it isn't a hereditary limitation on IQ that determines whether a child will have it or not.

Pribram: The question I wanted to start out with this morning, because I think everything hinges on it, is, what criteria are we going to use as an aim for our school system in what it teaches? Are we going to teach Yoga? physical science and hypothetical, deductive reasoning? or any of these things? Maybe we want to teach all of them to different groups.

Sarason: May I try to answer that? From Kohlberg's paper, I would say it goes something like this: Dewey said schooling is not a preparation for life, it is life. It means that wrapped up in the classroom is the world of work, the world of values, the world of skills; everything that is out there in the world is right here in the classroom. The question is, how do you get children to experience, to confront, to understand the life in the classroom? Now what Kohlberg has been emphasizing, I think, particularly in the area of moral development, is that if you are going to take off on various kinds of moral issues that exist in the classroom, then you had better understand that a child's conception of morality changes over a period of time. A five- or six-year-old child is incapable of identifying with someone else's position on a moral issue.

Kohlberg: Most of you are thinking seriously about what the concept of development can contribute to the aims of education. Most of you are thinking that the objectives of education have nothing to do with the concept of development. As a clarification, let me say that the concept of development is a guide to the selecting and defining of aims of education, which is what I tried to say in the paper. It is a very important issue.

I agree with what Sarason said but an easier way of looking at developmental psychology is as a greater awareness of where the child is at, the limit of where he is at, the fact that you cannot expect adult verbalization from him. But I think there is a more basic point relating to what the positive aims of education are. From the point of view of development, if there really are culturally universal, developmental trends, then that affords strong warrant for the fact, I think, that you can make a good philosophical case that a higher stage is more adequate in some fundamental way than some lower stage. Zen buddhism is not a culturally universal stage and one would be hard-pressed to think of why reaching the Zen buddhist stage, if such there were, would be more adequate. There is a good reason to think that logical thinking of the principled sort that Piaget talks about is more adequate than concrete reasoning or non-logical reasoning. His whole series presupposes philosophically that formal operations are better than concrete operations; he theorizes that a child moves from concrete to formal observations because the latter are better. If we think that reason is of no value in human affairs, we ought to all go home and not hold a conference.

Chairman: It seems to me that central to everything that Gattegno has said is the question of whether reason is necessary or even desirable for everyone. Am I right?

Gattegno: May I explain? There is a notion that guides me and I think could guide everyone, that is, as a total human being I the infant become aware of sections or slices of the universe. I get into a profound dialogue with the whole of myself with it and I become aware of it and of its mechanisms and it becomes mine. Therefore, it is no longer outside me as it may have been, it becomes part of me. After some time, I reach that stage of adolescence where I become aware of my awareness; then thought gains a quality, moral relations gain a quality—a new quality because I am aware of the awareness. Therefore a dialogue with the child will not be at the level of his being aware of the awareness, but of his being aware of the universe in which he is, and it may have components of morality. What appears to me to be in the stages described in Kohlberg's paper is that we are concerned with the human being who expresses himself. The child says what he believes in and what he knows: he is sincere and direct; and he is not to be judged by what he will be like later. When he gets to a new level, he will integrate all that has gone before and he will change the meaning of it. What we are doing in this stage of operation is to give an absolute value to what is momentary—what I have to do with my pupils is to understand what they are doing with themselves. For example, seeing has a long evolution, not sight but seeing.

It takes, for most of us, 4, 6, or 8 years of trying to draw to learn to see, because seeing is not the optical effect of photos on one's retina, it is judgments and involvement. Therefore, just as seeing takes so much time, the same is true of such things as moral judgment and the meaning of relationships with people. All have a thickness in time. We must look at people in time and as awarenesses that are not involved in moving toward a better stage but are involved in their own functions at the stages they are in. When one has accumulated enough awareness, one can recast everyone of his functions and find other things in them. This is a new beginning and it is why children can judge society, religion, and people, which they couldn't do before. They couldn't do it because they weren't interested.

Sarason: There is a moral problem involved and that is the needs of an individual and, in another sense, the needs of the group.

Chairman: It seems to me that this is the direction we started in when Blocher tried to go back and find out where Gattegno was. I thought Pribram was saying, when do you ever take into consideration the society and the culture and their needs. It sounds very much to me that Dr. Gattegno is going to operate his whole school on the needs of the individual. If I understand Kohlberg, it is that a school is a place where you pay attention to an individual and you work out a set of experiences that will allow you to help that individual to develop. We are talking here about schooling as a process rather than about schools. I would like Dr. Pribram to tell us his notions of what schooling is all about because in this group, I think, he is about as far away from Kohlberg as anyone.

Kohlberg: In the moral education area, for instance, I know that the best way to stimulate the moral development of the child is to have a just school. Now that sounds very different from what the Chairman said.

Pribram: My problem is that I see Kohlberg switching back and forth. He gave us three ways of looking at educational aims. One, the transmission of culture, two, free development or mental health; and three, the Dewey approach. Now I have not heard him say at any time that schooling is the transmission of culture, although he got pretty close to it when he said you've got to have a just school to get decent moral development. That's close.

Scriven: You would have to have a just culture.

Chairman: In fact, a just school might be the worse way to transmit the culture.

Pribram: Yes, the worse way because that's not the way to teach moral development. Moral development comes in for a physician who has a patient in terrible pain with two days to live: Should he give him an extra slug of morphine and put him away faster or not? These are fine problems where one cannot say what justice means.

Kohlberg: I would argue that we have a perfect idea of what justice means.

Pribram: So you do get to the classical position at that point. You also sound at times as though you want the individual just to grow. But your real position is a transactional one and that never comes across because we don't have the language for it. But I think we do have the vocabulary for transactions; in psychology we have developed a vocabulary, words to talk about these things, but what has happened is that Kohlberg is not yet using the transactional vocabulary although he has established a position that is a transactional one.

Now I think that what Dr. Gattegno is talking about is that the individual has to bring something and until he does there is no transaction going on. He gave us a very beautiful example. You don't just put pictures up in front of people because they don't develop their seeing capacity this way. They have to do something about it, to pay attention, to—what I call in my paper, enactment—to enact the visual scene somehow.

Kohlberg said that in developmental methods there is a way of talking about aims. So we said, all right, give us some aims that come out of the developmental approach and he said that human beings ought to be rational, which is a good Piagetian position, but then someone comes along and says existentialism supersedes that.

Scriven: Let me try to clarify in my mind what the discussion has been about up to this point. It is obvious that you can't teach something to a child when the readiness for learning it is not there. Beyond that I'm not getting anything but that a really bright, creative teacher, and I think Gattegno is a good example of one, can break almost all pre-existing a prioristical, theoretically-bounded claims about what can be done at such and such a level. We have a long history of this in education which seems to me to be inductive, excellent grounds for being extremely cynical about all theoretical claims about what can be done at what age with what child or at what statistical standard deviation in a group of children. What we are really entitled to is the certainly clear claim that there are different—forget the word stages—capabilities at differing ages in a given child with respect to different types of cognitive tasks. We are much better, much less a prioristic than we were 10 years ago, I think. We've become much more sensitive to most of those theories that didn't work too well. And we can say much more in most of those areas of what sequence—not necessarily age—the average child goes through in order to succeed in getting something.

Now that's totally different from Pribram's question, which I don't know what to do with. Should we judge the whole conference on the aims of education? It is sort of fatuous to talk about training teachers if we don't know what we are trying to get them to do. As a philosopher, I am trying to disregard it. Forgetting that for the moment, let us stick to the pay-off end: What can we learn from developmental psychology and later from other branches of psychology about what we should train teachers in and what teachers should do with children? It seems to me that there are a lot of things we haven't had any mention of at all: the attention span, for one, which surely is relevant. We ought to start in again on the task of relating what data we have on attention-span changes to teaching-style changes or the presentation of structuring changes; the same sort of thing could be said about cognitive styles, emotive changes, moral development, and so on.

Let me make what is also a practical point: Nobody seems to be so far talking about the problem of the student's relationship to the teacher. Take a very simple question: At what age is the whole business of didactic teaching hopeless with respect to *this* student that I identify? At what age is it possible in certain subjects? And at what age does it become hopeless again? I am sure there is not a linear-increasing kind of activity here, just an up and down. At what age is a reading approach paying off better than didactic, personal presentation? At what age does group interaction do a better job? At what age is it much better to use cross-age teaching and have a child two years older rather than a teacher teaching this child? At what age are sex crosses important for the teaching of certain substantive material and at what age are sex similarities crucial?

It looks to me, to return to my original point, that what we need to learn is humility and damn little else. We've got to start all over again by listening to the variables that are important on both the independent and dependent sides and then start looking with respect to one subject, one set of subjects, and one set of children; and to what sequence is important and, indeed again, the question of whether any sequence is better than any other sequence; and whether there are recognizable and describable stages in the development of arithmetical education or other areas of education such as reading a foreign language, and so forth; and then start accumulating what we find in a cook-book sort of way. It seems to me that what we are learning here is that the general theories do not transfer enlighteningly as specifics. What bothers me about these theories is that as a non-member of the family I can see what follows from the theory as to what I should teach this child or this set of children in this classroom next week. All of the theories are perfectly consistent with all of the facts. That, to me, is a sign of poor theory.

Kohlberg: Scriven has a privilege here because there are only two kinds of intellectual disciplines that can help to define educational aims: One is psychology—developmental psychology, primarily, but other forms as well—and the other is philosophy. Really, the experts on the aims of education are the philosophers like Scriven so when he decided to scuttle the whole discussion about aims, he was within his rights. I don't know whether you consider the aims of education to be psychological or philosophical or a mixture of the two as I do. The issue of the aims of education is important on a very practical level. I call various papers that I did, "The Child as a Moral Philosopher"; Piaget called his, "The Child as Philosopher." The fundamental insight of Piaget is that in a certain sense the child is a philosopher, that is, he is hung up on the problems that philosophers are hung up on. Teachers of philosophy have the role too, after all. They have to make some sense out of the enterprise that they are engaged in, why they are doing it, and so on, and somebody's got to give them some help in doing it, not just teaching them methods without any rationale, reason, or purpose for what they are doing. And that's what we call talking about the aims of education.

Scriven: I don't want to scuttle it. I'm just saying that it is going to be a terrific investment and diversion from our original plan.

Kohlberg: Yes. I don't think we should try to come to agreement about it. I think maybe we should change and go on to other topics.

Chairman: And so we will this afternoon.

Social Psychology and Innovations in Education

Carl Backman

Educational psychology and the sociology of education are relatively old fields of specialization in psychology and sociology but the discipline of social psychology is a hybrid that has only recently become concerned with education. The first volume devoted explicitly to social psychological studies in educational settings was published less than a decade ago under the sponsorship of the Society for the Psychological Study of Social Issues. In their introduction to this collection, the editors commented,

> Until a decade or two ago, educators were wont to lament what seemed to be a lack of concern on the part of social psychologists with educational issues and settings. Social psychologists seemed to turn up everywhere—in the distant early-warning stations in the Arctic and submarines under the Atlantic, in executive training programs and jury rooms, in German concentration camps and the Kingdom of Father Devine—everywhere except in the schools. But this neglect seems well on its way to being remedied, as the selections gathered in this volume will, we hope, attest. Indeed, the editors and the sponsoring society hope that the present volume will further the application of social psychological theory and method to pressing educational issues (Charters & Gage, 1963, p. xv).

These hopes have been borne out in the ensuing years. The editors of the second edition of the volume noted,

> During these few years, energy devoted to the study and improvement of the American educational system has also increased radically. Research and development centers, conferences on educational innovation, dozens of new curricula, increasingly sophisticated hardware, regional educational laboratories, workshops to train "change agents" have all proliferated. The militancy of teachers, the powerful pressures of black parents for relevance, and the revolutionary interventions of students have made it clear that an enterprise involving about 35 per cent of all Americans on any given working day is, after all, important (Miles & Charters, 1970, p. 2).

Although our knowledge is far from definitive, a review of social psychological theory and research done both in and out of educational settings suggests some basis for policy recommendations. Admittedly, these recommendations do not rest on as strong an empirical base as one might prefer—the findings are not without contradictions—but it can be argued that it is better to move on the basis of available but incomplete knowledge rather than to remain stationary, or simply to drift from one fad to the next in the way that seems to characterize much previous educational innovation.

Sufficient knowledge has accumulated at three points in the field to warrant attention from policy makers. First, social psychologists have contributed, to some degree at least, to the new view that conceptualizes intelligence not in terms of innate capacity but, rather, as a gradually accumulated fund of skills that is greatly affected by social experience. Second, social psychologists have become increasingly aware that the social climates of educational settings differ markedly and these differences have effects on student performance. Finally, social psychologists have gained some understanding of factors affecting productivity and satisfaction in work groups. While much of this knowledge is based on research done in work settings other than that of the classroom, it can serve to illuminate what goes on in the educational setting. Underlying these developments has been the growth of a general approach to motivation, learning, and personality development that shifts the principle locus of causation from within the skin of the individual to his recurring interactions, that is, to his relationships with others. This shift is perhaps most obvious in the manner in which intelligence is now viewed.

Intelligence: The New View

While the new view of intelligence does not deny a role to genetic endowment, prenatal factors, nutrition, and so forth, it emphasizes the role of social factors and assumes that through the manipulation of these factors the individual potential for development, whatever that is, can be maximized. One could argue that the effect on educational practice would be very salutary if we could forget somehow about the contribution of nonsocial factors entirely and look at the intelligence of the child strictly in terms of the history of his relationships with others. Two reasons support this argument: First, such a viewpoint turns our attention to factors that can be most readily changed and, second, it prevents the kind of cop-out, to use the current vernacular, that still pervades much of educational practice, that is, the tendency to work within the limits of a child's innate capacity inferred from his IQ test or other indicator of current performance.

The somewhat radical perspective of labeling theory, from which sociologically-oriented social psychologists are beginning to view deviant behavior, might fruitfully be adopted here. From this standpoint, delinquent and criminal behavior, functional mental illness, and other departures from what is deemed conventional or normal behavior are thought to be largely the products of the behavior and perceptions of those who cope with the so-called deviancy as control agents or therapists. Goffman (1961), Scheff (1966), and others have made a convincing case for regarding the behavior of the mentally ill as very much a product of the perceptions and behaviors of relatives, psychiatrists, and various ancillary treatment personnel, as well as of the structures and cultures of treatment facilities. We have increasingly come to realize that the delinquent and the adult criminal are largely a product of our treatment methods. I use the term "treatment" purposely because institutions with treatment philosophies seem to do little better in changing the delinquent or criminal than do those with the more traditional punitive orientation. Both, however, do an effective job of labeling.

Applying this perspective to the educational process, we would consider the structure and culture of the school and the teacher and other school personnel, including other students, as determinants of the level of intellectual performance typically thought of as intelligence. The evidence in favor of the role of labeling in this context is no less compelling than that for deviancy. Thus it seems clear that ability-grouping, or streaming as it is called in England, tends to fix the upper limit of a child's intellectual performance. It is a self-fulfilling-prophecy mechanism by which labeling produces the behavior justifying the label and it operates here as elsewhere, consistent with the social psychological theories that view stability and change in individual behavior as a function of the relation between behavior, the self-concept, and the behaviors and perceptions of significant others. A number of findings from recent studies in educational settings point out some crucial variables in this process.

The dramatic findings of Rosenthal and Jacobson (1968) on the effects of teachers' expectations on changes in children's intelligence-test scores have been called into question on methodological grounds, but two other sets of findings have provided support for their initial hypothesis and give some indication of the mediating variables. It is clear from such field studies of the effects of the track system and from a number of experimental studies that when children are labeled as having different abilities, teachers as well as others perceive and behave toward them in a manner that could be expected to result in the children's performances conforming to the estimates of their abilities. Thus Schafer, Olexa, and Polk (1970) reported the existence of grading-floors and ceilings for college-bound and non-college-bound tracks in the schools they studied. Beez (1970) conducted an experiment in which teachers were given information describing children as having either low or high ability and then were asked to teach a symbol learning-task to the children individually. Teachers attempted to teach fewer symbols to the children labeled as having low ability and, as might be expected, these children did less well. The teachers' ratings after the task reflected the effect of their expectations: The group described as having low ability was rated as demonstrating lower intellectual ability and social competence. That teachers tend to view poor performance as a reflection of the child's ability rather than of their own behavior has been demonstrated by Johnson, Feigenbaum, and Welby (1964). The subject teachers were led to believe that they were teaching pupils whose subsequent performances improved or failed to do so. Improvement was perceived by the teachers as the result of their efforts whereas failure to improve was attributed to deficiencies in the motivation and ability of the children.

The effects of labeling by the teacher as well as by others, such as peers, counselors, and other school personnel on children's self-concepts—particularly their feelings of confidence and mastery—is supported by both anecdotal and more systematic types of data. With respect to the latter, it may be recalled, the factor accounting for the greatest variation in pupil performance in the Coleman Report (Coleman, Campbell, Hobson, et al., 1966) was the child's sense of control over his environment. The child who has experienced continued failure and little success sees himself as having little chance to alter his fate.

It is indeed ironic that the chief justification for ability grouping is to allow children of different abilities to proceed successfully at different speeds and thus to insure success experiences, yet this practice has had just the opposite effect. Because of the labeling process, ability grouping inevitably results in children's experiencing a profound sense of failure. Somehow educators must come up with a system that allows children to proceed successfully albeit, at times, at different learning rates and, when a child is experiencing difficulty, that does not lead others or the child himself to label him a slow learner with limited ability. What form such a system will take—individual machine instruction, ungraded classes, or other method—I am not prepared to say; but one thing seems clear: For such a change to occur teachers must be exposed to this view of the nature of intelligence and face up to its major implication that they and the educational system of which they are a part play a significant role in determining the intelligence of the children in their charge.

Social Climates in Educational Settings

Social psychologists have become increasingly interested in variations in school culture, the determinants of such differences, and their effects on pupil learning. Studies performed so far show marked differences in values and attitudes among students in different schools, and these differences have been related to differences in educational aspirations and performance. Thus, in high schools where the school climate stresses academic excellence, the relation between ability and grades (Coleman, 1961) and motivation to attend college (Boyle, 1966) has been found to be greater than where such a climate is lacking. Sources of such differences in climate have been shown to be three-fold (Backman & Secord, 1968): First, there are differences in the social characteristics, interests, and abilities of the students attending different schools; students at Yale or Harvard are quite different in these respects from those attending a typical community college. The background of students in ghetto schools may similarly be contrasted with those attending middle-class suburban elementary or high schools. Second, out of the various features of the school itself, the quality of its program, and the excellence of its staff and facilities come differences. Third, the history of the school and the informal social structures and cultural elements that are passed on from one student generation to the next give rise to differences.

While it is difficult to separate the effects of each of the sources, what evidence we have suggests that the first, the characteristics that students bring to the school situation, are the most important determinants of the overall climate of the school and its effect on student performance. In his analysis of the Coleman Report, the best known study dealing with school climate in the context of the effects of class, ethnic, and racial balance in our schools, Dentler (1966) noted that children make the climate.

> What the child brings with him to school as strengths or weaknesses determined by his social class is the prime correlate of school achievement. It is influenced—offset or reinforced—most substantially not by facilities, curriculum or teachers but by what other pupils bring with *them* as class-shaped interests and abilities. In practical terms, as the proportion of white pupils increases in a school, achievement among Negroes and Puerto Ricans increases because of the association between white ethnicity and socioeconomic advantage (p. 29).

The prevailing attitudes, interests, and values that color the culture of a school appear to have different effects on a student's performance depending on his background. These interesting interaction effects suggest that when the racial, ethnic, or class composition of a school are altered, any gains achieved by the disadvantaged youth need not be traded for decrements in the performance of children from more favored backgrounds. In tracing the implications of this finding for the integration of northern schools, Dentler (1966) considered that school composition appears to have little affect on Northern, urban, white children.

> These majority group students achieve more or less well because of what they bring with them to school from their homes. Negro and Puerto Rican students, however, can gain from positive changes at nearly all points: improved peer environment, improved levels of interest that spring from peer influences, better teaching, facilities and curricula. As the case studies in the Coleman Report suggest, minority group children can gain in achievement to the extent that the desegregation plan is deliberately executed to accomplish that objective (p. 29).

Although these findings on the effects of school climate and their relevance for such current issues as school bussing and the advantages and disadvantages of the neighborhood school are of great interest today, and no doubt will and should lead to further research, earlier studies of school cultures focused on another problem: that of the peer culture, which, it was long thought, worked against the achievement of the educational objectives of our schools. There is some reason to believe that this charge has been exaggerated because abundant evidence suggests that peer values do not support academic achievement as strongly as do the values of parents and teachers. That academic performance has positive value in the peer culture has been shown by Turner (1964); but Coleman (1961) found that when academic performance is pitted against athletic prowess (for boys) or leadership in school activities or peer popularity (for girls), it is less valued.

A number of explanations have been offered for the peer culture's lower evaluation of academic excellence as compared to athletic prowess. Coleman (1961) found the explanation in the different ways that academic and athletic activities are organized. The former is an individual activity and the rewards, such as grades, go to the individual at the expense, at times, of others who must work harder to successfully compete; athletics is a team activity with other members of the team as well as the school and sometimes the community sharing at least vicariously in the rewards of victory. Backman and Secord (1968) drew on social comparison theory to suggest that differential achievement in the intellectual realm, as opposed to athletic prowess, more frequently leads to invidious comparison and consequent lowered self-esteem. Thus persons protect themselves by devaluating performance in the academic area. Briefly, the authors suggested that persons tend to evaluate their abilities in an activity by comparing them with those of others and particularly with those others who are similar. Since the cues to differences in athletic abilities are quite salient and are acknowledged to be great in our culture, persons rarely compare themselves with others who are athletically superior to themselves. They thus avoid comparisons that could deflate their self-esteems. The cues to differences in intellectual abilities are less clear, partly because in our society the democratic ethos has played down the existence of intellectual differences, and a person tends to compare himself with all comers frequently to his disadvantage and a resultant loss of self-esteem. To avoid the loss, the value of intellectual performance is depreciated. Stinchcombe (1964) suggested that rebellion in the classroom and the general rejection of academic excellence arises in part from the inability to compete successfully, particularly for the middle-class child of low abilities, and also because of the lack of articulation between school activity and future status. For the disadvantaged boy headed for early entrance into the working force or the girl oriented toward early marriage, school work has little relevance. Thus they reject those values that emphasize the importance of doing well in school.

All three explanations of the comparatively low value placed on academic excellence are probably valid and each has implications for changes in policy. Coleman and his colleagues (1966) argued for more group intramural and extramural competition in the intellectual realm similar to that occurring in athletic programs. Backman and Secord (1968) commented on these ideas as follows:

> Just as athletic competition has led to the emphasis on athletic prowess in the adolescent world, so competition between groups or individuals as group representatives could be expected to result in rewards being conferred for excellence in other areas. Such forms of competition between schools as team debates, music or drama contests, and science fairs have been suggested. More radical schemes could be adopted, such as the organization of students into study or project teams, where the brighter students could augment the instructional process by serving in that capacity themselves (p. 71).

Such procedures have the effect of utilizing the powerful reward of social approval to motivate learning. (An elaboration of this idea is in the following section.) As for the lack of articulation between school work and future activities, the New Careers model provides a meaningful way for students who are, initially at least, not college-orientated to continue part-time school work as they move up through an expanded career hierarchy. Schafer, Olexa, and Polk (1970) described this program and its advantages as follows:

> The New Careers model provides for new options. Here the youth who does not want to attend college or would not qualify according to usual criteria, is given the opportunity to attend high school part time while working in a lower level position in an expanded professional career hierarchy (including such new positions as teacher aide and teacher associate in education). Such a person would then have the options of moving up through progressively more demanding educational and work stages; and moving back and forth between the work place, the high school and then the college. As ideally conceived this model would allow able and aspiring persons ultimately to progresss to the level of the fully certified teacher, nurse, librarian, social worker

> or public administrator. While the New Careers model has been developed and tried primarily in the human service sector of the economy we have pointed out elsewhere that it is applicable to the industrial and business sector as well.
>
> This alternative means of linking education with work has a number of advantages: students can try different occupations while still in school; they can earn while studying; they can spend more time outside the four walls of the school, learning what can best be learned in the work place; less stigma will accrue to those not immediately college bound, since they too will have a future; studying and learning will be inherently more relevant because it will relate to a career in which they are actively involved; teachers of such students will be less likely to develop lower expectations because these youth too will have an unlimited, open-ended future; and antischool subcultures will be less likely to develop, since education will not be as negative, frustrating or stigmatizing (p. 46).

To the degree that educators hope to change the culture of the school in the direction of rewarding academic excellence, they should be mindful of the fact that the influence of future careers is not so effective in changing individual motivation. Studies of the impact of this form of influence in the schools have revealed factors both external and internal to the individual that result in cultural influences largely reinforcing the values, attitudes, and aspirations he brings into the school situation from his home and neighborhood. Schools, especially larger ones, do not have a homogeneous culture. They consist, rather, of a number of subcultures that are characteristic of various subgroups of students, which are formed partly on the basis of class, ability, and curricular groupings, and partly on the basis of the tendency for persons to seek out as friends others who are similar in attitudes and values and support their self-conceptions. These findings explain in part, at least, why the initial characteristics that students bring to the school are such powerful determinants of future academic performance. Under certain circumstances, however, the school climate can have other than a conservative effect, as is seen in the following quote:

> This is apt to occur where the character and the climate of the school are markedly at variance with student characteristics and family background. The lower-class child, white or Negro, in a predominantly middle-class school, or the adolescent from a politically conservative home who enters a school with a liberal political ethos, are cases in point. In both instances they appear to be markedly influenced by their new school environment. Sometimes the individual's own characteristics, particularly his attitudes and self concept, are inadequately anchored in nonschool groups. In this instance he is apt to find support in the various school groups (Backman & Secord, 1968, p. 70).

The implications for action should be clear. It may be difficult to counter the tendency for like to seek out like, but structural features of the school, such as ability grouping, different curricular tracks, and other practices that foster the formation of subcultures that weaken the potential benefits of favorable cultural influences, should be examined and modified where possible.

Group Motivation and Reward

Most social psychological research on the educational process has focused on variables outside the context of the classroom and yet it is within this context that teachers encounter most of their day-to-day problems. The remainder of this paper illustrates how knowledge of structure and process in small groups can be helpful in handling the recurrent problems encountered in the classroom. While admittedly much of our knowledge in this connection is based on studies of task or work groups in noneducational settings, the same principles can be applied. After all, the classroom group is essentially a work group. It shares with all work groups the problem of achieving somehow an optimum ratio of task to non-task activities. This problem is basic to classroom discipline and teachers, like all task leaders, must solve it. Everyone familiar with the educational scene has noted wide variations in the ratio of task to non-task activities from school to school, from classroom to classroom within a school, from one student to the next, and from one time to another. It has been frequently reported that an inordinate amount of time in our ghetto schools is spent on essentially non-task activities related to problems of control and discipline. Every teacher has had some classes that were heavily task-oriented and others that were marked by a high degree of disruptive non-task activity. All teachers have probably noted a certain rhythm in classroom activities—extended periods of task activity followed by bursts of non-task behavior—and all are aware that some pupils are more diligent scholars than others. An understanding of the motivational support for each kind of behavior throws considerable light on these variations and provides a basis for outlining classroom strategies that can have the effect of increasing task behavior.

Social psychologists in recent years have found it useful to think in terms of exchange theory, a blend of theories from economics and psychology that view interaction between persons in terms of an exchange of rewards and costs collectively referred to as outcomes. In analyzing the outcomes associated with task and non-task activities one can distinguish three sources: First, the activity itself may be intrinsically more or less rewarding or costly; certain elements of play as well as creative activity may be intrinsically rewarding; and other activities may have components that give rise to boredom, fatigue, or embarrassment and are experienced as costs. Second, assuming that non-task as well as task behavior is goal directed, then the satisfactions of goal achievement provide the rewards or costs. Acceptance by peers is an example of a goal that is pervasive in most group interaction whether it is task or non-task. Finally, one has reactions from the self and others as a consequence of conformity to or deviation from the normative expectations of the group. Thus a member of an athletic team receives self-approval and rewards—social approval—from others for conforming to the norm that each team member exert himself to the fullest extent.

Educational innovations have frequently involved manipulations of the first two sources of rewards. Changes in curriculum as well as in teaching methods have frequently been made in an attempt to increase the rewards and reduce the costs intrinsic to work activities in the classroom. The current emphasis on creative problem-solving rather than on rote memorization and the use of educational games are examples of such attempts. Similarly, educators from the time of John Dewey to the present have attempted to tie learning to goals that are relevant to the student. Educators have paid much less attention to the third source of outcomes, despite the fact that group-mediated rewards have two important advantages over the other two. They involve the giving or withholding of social approval, rewards, and punishments related to powerful drives; and, in contrast to behavior that is related to the achievement of distant goals, these outcomes are generally applied uniformly and immediately following the activity and thus are apt to be maximally effective. The lack of attention to group-mediated outcomes has resulted for the most part in their being associated with non-task activities.

In the classroom, as well as other work settings, the norms that frequently arise are restrictive in nature and discourage maximum task activity. They function to protect group members from the costs of excessive competition. One such cost is anxiety over the possibility of invidious comparison, of being judged less worthy as a person because of one's poor performance relative to others in some activity. As has been previously noted, individual competition in the intellectual realm frequently leads to invidious comparison because of the tendency of persons to compare themselves with all comers rather than to restrict themselves to those of similar ability. Where the activity itself is more costly than rewarding, as in much of school work, restrictive norms function also to keep productivity within comfortable levels for all. Note that while in some instances the norms may explicitly set production limits, as when a class of students agree not to turn in term papers of more than a certain length, more often the normative influences are reflected in a certain degree of hostility toward those who over-exert themselves in the task area. However, norms are a powerful source of control and can be used to advantage to the degree that a teacher can effectively change the normative climate to support for task activity and encourage the social structure of the classroom to favor maximum conformity to these norms.

The teacher's ability to make normative changes depends in large part on her position in the power structure and on the sources of her power. Contemporary analyses suggest that relative power in a relationship is a function of the resources, dependencies, and alternatives that each party brings to a situation. In the classroom, a teacher's power depends on how well the resources that she commands satisfy the needs of her students relative to what they can obtain in interaction with others. To the degree that students become dependent on her for the satisfaction of important needs and goals, she will be able to influence them. A number of bases of power reflecting the various forms of resources and dependencies have been distinguished (French & Raven, 1959). In varying degrees they are involved in the relation between a teacher and her students. Thus she can exert both reward and coercive power by virtue of providing such rewards as high grades, certain privileges, or disapproval. The strength of her reward or coercive power depends in large part on the dependencies of her students, the degree to which they desire good grades, or wish to avoid poor ones, and their desire for her approval. It is probable that one of the reasons teachers can exert relatively little influence in ghetto schools is that their charges are less concerned than children in a middle-class suburban school with grades or the approval of the teacher.

Teachers also exert influence by the regard held for them as experts. One tends to be influenced by another person to the degree that the other is seen as having the knowledge and skills that will aid one to achieve his goals. This principle explains in part why teaching effectiveness is positively correlated with the intelligence of teachers and the amount of training they have received in the subject matter they teach. However, the extent of a student's interest in academic goals determines the potency of these factors as a source of power for the teacher.

One person may be able to influence another because the latter desires to be like the former. Such influence, called referent power, can be an important form of power for the teacher insofar as students tend to identify with her. Identification appears to be facilitated depending on how much a teacher is liked, respected, and perceived as powerful (Backman & Secord, 1968). Also, other things being equal, identification appears to be facilitated by similarities between the person and the target of his identification (Secord & Backman, 1964). Thus a teaching style that is sufficiently warm to mediate important social emotional rewards and yet sufficiently distant to maintain respect could be expected to maximize this form of power. Also, the facilitating affects of similarity suggest the greater use of minority group members as teachers in schools where the students are primarily from the same minority groups.

Referent power is not only an important form of power in and of itself in the classroom but, to the degree that it leads to the adoption of the values and normative expectation of the teacher, it may lead to legitimate power. One person exercises legitimate power over another to the extent that the latter has internalized norms and values that support his behaving in accordance with the wishes of the former. The teacher can exercise legitimate power depending on how much the pupils internalize values conducive to educational striving and norms that dictate that the teacher should guide them in these activities. It should be emphasized that legitimate power differs from other forms and in this difference lies its particular potency. Legitimate power, since it rests on group-held values and expectations is enforced by both self-imposed and group-imposed sanctions, which, of course, returns us to the question that began this discussion of power.

How may the normative structure of the classroom be modified so that its influence favors maximum task activity and resultant learning? The discussion of sources of power suggest a number of strategies, some perhaps more feasible than others. First, the discussion of expert and referent powers indicate the importance of selecting teachers who are well trained and who have both the personality and social characteristics that will maximize identification and consequent referent and legitimate power. Second, since a major source of the values and the normative expectations of pupils lie outside the school, in the home and the community, a more conscious attempt to control the value mix in our classrooms would seem logical. As it stands, current practices of grouping children appear largely to ignore this consideration. Even where various desegregation plans are in effect, much is lost because there is insufficient follow-up at the classroom level. Finally, much more experimentation with group competition in the classroom should be tried. It would involve restructuring the learning situation so that the unit of performance would not be the individual but the group. As noted in the preceding section, Coleman et al. (1966) have argued that one might be able to alter adolescent values of academic achievement by fostering intramural and extramural competition between academic teams comparable to what now occurs between athletic teams.

A similar approach might be taken to learning in the classroom. For many activities, students could be formed into groups and the groups would compete in much the same way as individuals do in our classrooms at present. The group rather than the individual would be the unit of responsibility receiving the rewards and punishments associated with successful or unsuccessful performance. Such an arrangement would motivate students to excel for the sake of the group and both to encourage and help other group members to develop the skills and knowledge necessary for the group to achieve maximum rewards. This approach is the one essentially used in the Soviet Union (Bronfenbrenner, 1970) and while I feel that the excessive use of group pressures in this manner may have its dangers—there is some reason to expect that Soviet education leads to excessive other-directedness and over-conformity, for example—some use of this structure of classroom activities may well have some very potent advantages. Certainly, current research and theory in social psychology would suggest that innovations in this direction should be explored.

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A Commentary on the Paper of Carl Backman

Herman H. Long

I found Dr. Backman's paper both stimulating and rewarding, partly, I am sure, because it supports the biases of my own experience as a teacher in three Negro colleges, but certainly because of its cogent and clear application of the sociopsychological knowledge that is salient to the teaching and learning processes. As key contributions to educational policy, Dr. Backman credits to social psychologists (a) a new view of intelligence not primarily hinged upon innate capacity, and (b) the discovery of a general approach to motivation, learning, and personality development that emphasizes recurring reactions and interrelations with others as important causal elements. Although not ignoring what might be the innate potential of the individual, Dr. Backman believes that educational practice would be helpfully served if non-social factors could be ignored and attention given to those factors that can be changed and managed. And to this he brings the perspective of labeling theory that offers evidence from work with delinquents, the mentally ill, and students classified into ability groupings, that such classifications of individuals for purposes of education or treatment lead to a self-fulfilling prophesy. As a result, children tend to perform in a manner that conforms with what is expected of them by teachers and others. Thus, Dr. Backman proposes a system that allows children to proceed successfully, although at different learning rates, and that avoids the identification of the child as a slow learner either by himself or others.

My comments on this body of ideas are largely tangential and, while they may not offer a sufficient critique of Dr. Backman's effort, I believe they fall within its general context. I was pleased to find absent from his considerations mention of the current brand of theory that defines the problem of educating lower-class youth in terms of cultural deprivation. I refer to it primarily to suggest that I believe it to be an essentially barren line of departure. As with many ideas that come in vogue in education, it involves the over-extension of a possibly useful and simple insight into a new and grand category of human typology, that of the culturally deprived. In its programmatic usage, the term has become almost synonymous with the poor, Negroes, and students attending schools in areas described as the ghetto. It is an approach and a point of view that is now projected on a national scale in the education establishment and under assumptions that have become doctrine. Since Negroes are largely poor (in contrast to the modal image of white, middle-class affluency), and since they primarily live in areas of segregated housing, this conception has the practical effect of making all blacks being deemed as culturally deprived. And in this simplification, which widely occurs in program and practice, cultural deprivation has assumed, I think, the proportions of a new and subtle, though perhaps beginning, form of racism. I look upon it as a special case of the trap of labeling and classification into which our efforts of education have so often fallen.

Cultural-deprivation theory, in its applications at least, is perhaps more. It is both a diagnosis of what is deficient in human beings of a certain type who are involved in schooling, on the one hand, and a formula for their instruction on the other. What emerges, I am inclined to believe, is a species of educational pathology that cannot cure the patient (I almost used the word victim) because it is itself a generator of the virulence. While Backman's primary reference is to the artificial classification and grading of individuals on the basis of presumed ability through the traditional system of educational procedure in this country, these comments suggest that a special danger to our task of enhancing human development lies in the social categories into which individuals are put in the American scheme of race relations.

Backman's analysis, for me at least, throws into context the historic problem of Negro education in this country that has been beset over the years with a major assumption of biologically-determined inferiority based on color. In earlier days, not so long ago—my own experience in the lower schools was involved—it was believed that Negroes could not learn such subjects as Latin, Greek, and mathematics, on the assumption that these subjects involved "higher" intellectual demands that blacks at large were not capable of performing. For all of almost three generations, the education of Negroes in America can be described as a struggle against this assumption. A corps of dedicated teachers, some Northern, some Southern—but mostly Southern—some white and some black, dedicated their entire lives as teachers to proving these beliefs to be false. Their efforts in the Negro colleges produced the first generations of black scholars, medical doctors, and scientists. And as late as 1962, a study by Horace Mann Bond (1967), indicated that for all Negroes in the nation who earned doctorates over the 42-year period between 1920 and 1962, better than *two-thirds* had their undergraduate instruction in the historic Negro colleges.

The long-term preoccupation of psychologists and educators with the measurement of intelligence in compared groups of Negroes and whites constituted another dark passage in the higher education of Negroes in this country. It was an interest that lasted some 50 years and produced many tomes; and yet, the results, by and large, have been equivocal, producing little of sustaining consequence for either psychology or education. The effort and debate, fortunately, have now subsided, even though racial assumptions still remain. Recent articles by Arthur Jensen have produced a minor wave of discussion in the *Harvard Educational Review*, but it is not likely that they will launch a new massive thrust of psychological investigation. In the broad time perspective over which this preoccupation has existed, I have come to the opinion that no useful purpose in educational policy, practice, and strategy is served by comparative studies of so-called racial differences in intelligence. I regard it as a fruitless enterprise having little or nothing to do with the task of the teacher in a classroom facing the challenge of young minds and personalities. Perhaps the only insight that is important now is the realization that the influence of such studies on educational policy was sustained too long.

Two rather minor reservations occurred to me in regard to Dr. Backman's suggestions for programmatic change, which I find quite promising on the whole. The first has to do with the recommendation that the educational and learning process be structured so that students can compete as groups rather than as individuals, thus receiving reinforcement from peer-group sanctions and achieving some degree of satisfaction and goal attainment. While the idea impresses me as a fruitful and possibly exciting line of educational innovation, a good bit more needs to be determined in such a departure for *what* groupings, *how* they are to be formed, and how lasting or shifting their tenures should be. What is involved, I think, are processes of group dynamics that, if they are to be shaped into a viable educational approach and technology, will require skillful and knowledgeable management. Further extension of the research already done, which might test the effects of these variables, appears to be called for.

The second reservation is in regard to the Coleman study of racial integration in the public schools, certainly a major landmark in this area of national concern, and an effort designed to provide systematic data for educational and public policy considerations. Although Coleman's finding that pupil performance is directly related to a child's sense of control over his environment is only one consideration in Backman's argument, I would urge restraint in applying the findings of the study as a whole as final answers. As a point at issue, I quote from Backman's citation of Dentler's analysis of the Coleman study: "In practical terms, as the proportion of white pupils increases in a school, achievement among Negroes and Puerto Ricans increases because of the association between white ethnicity and socioeconomic advantage." The Coleman study was largely a survey investigation, providing an analysis of certain important variables that could be identified from the data. Accordingly, it is an inappropriate vehicle for determining cause and effect. Such efforts can only suggest *possible* causal relations and leave to later experimental testing the determination of their possible validity. Selective factors, as one possibility, might easily account for the association that is claimed in the Dentler finding.

Backman's excellent analysis and review has suggested to me a final idea on the role of social psychology in educational innovation. While experimental psychologists may be expected to address their efforts to matters of the learning process itself—and this is not to suggest that other kinds of psychologists are not also experimentalists—an extremely valuable function can be performed by social psychologists in providing a body of criticism that can give direction to the larger educational operation as it is carried out by teachers, administrators, and planners. It can and ought to have a great deal to say about the effects of various educational endeavors, and it can detail the consequences of these endeavors for both the individual as learner and society at large. Although I do not claim this as its only function, I conceive it as an important one that can be considerably enlarged to the extent that it is conceived of as a strategic in-put to the determination of broad social and educational policy.

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Oral Presentation

C. Backman

My paper might be considered three partially-developed papers, in a sense, because it consists of three general sets of ideas or themes. The first seems to have some implications for some of the things we were talking about this morning. That's the so-called new view of intelligence. I hesitate to use the term as some of you will recognize it as not being entirely new at all; it has been around for quite a long time. But I submit that although we talk in a new way about intelligence, much of our behavior is still based on the earlier view. By the new view I refer to the idea that intelligence is a fund of skills—accumulated skills—that are greatly influenced by social experience. The last phrase, of course, indicates my own bias. This view is not new. Since the writings of Lecky,* for instance, many have been aware that persons' perceptions of their abilities—whether they have them or not, and what they do with them—are greatly influenced by their self-conceptions.

Implicit in the relation between the self-concept and performance is a more radical notion with which we haven't come to terms; that, of course, is the idea that teachers are influenced by how they perceive a child's ability. If we accept the proposition that a child's fund of skills is a product of his relationships with others, we can then go a step further to the radical position that a child's intelligence is a product of the teacher as well as of the child. This position, which places considerable responsibility on the teacher, is supported by increasing evidence. In my paper I cited two experimental studies in which it was found that teachers behave according to their perceptions of what their pupils are capable of learning. Teachers arrive at these conclusions without advice from others and often on the basis of all sorts of irrelevant elements of which they are unaware. Teachers have to face up to this practice. Indeed, they need to have their noses rubbed in it so to speak.

Some very interesting illustrations of how this practice affects our thinking appeared in this morning's discussion. I don't know whether the Piaget-Kohlberg position is correct. I fear that teachers with a kind of superficial grasp of it might jump to the conclusion that it provides a rationale for inferring that when a child does not respond to their best efforts it is because he is not mentally ready. I realize that the Piaget-Kohlberg position does not involve the automatic unfolding of cognitive skills but, historically, it is related to approaches that embraced this idea. I can see teachers being influenced by this to the degree that they might consider it a waste of time to try to teach a child something because at this stage he is not ready for it. We saw in Gattegno a dramatic illustration of someone who doesn't believe in the Piaget-Kohlberg position at all and has started to teach children subject matter that none of us believed a child could handle. Because he doesn't go along with this developmental view, his behavior is altered. He does things that lead his pupils to acquire skills considerably in excess of those taught in the typical classroom.

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* P. Lecky. *Self-consistency: A theory of personality.* N.Y.: Island Press, 1945.

The second theme in the paper is the idea that we have become increasingly aware of the effect on the learning process of the so-called climate or culture of a school. Much of the research on school climates has been done at the college level. We know that Swarthmore, Reed, and Oberlin are different from Syracuse, Berkeley, and other large universities. Not much significance for the public schools would have been attached to this research, I think, if the Coleman study had not appeared. Whatever the criticisms of this study on equality of educational opportunity, Coleman and his associates found that all of the variables they studied, including quality of teacher preparation, the amount of money spent on buildings, and so forth, paled in comparison with the importance of the characteristics of the students going into the school. These greatly influence the climate of the school and its effect on student performance. This finding has profound implications for some of today's controversial issues, such as the value of the neighborhood school, the advantages of bussing to achieve racial balance, etc.

My final point was considered irrelevant to education for many years. Psychologists have investigated the determinants of productivity and satisfaction in work groups but only in industrial and commercial settings. Educational settings were ignored for the most part. I think that what they learned has some implications for the classroom, which, after all, is a work group. In all such groups there is the problem of arriving at some sort of ratio of task to non-task activity. This is essentially the problem of classroom discipline that every teacher faces. I think that if we take a look at recent applications of exchange theory to this problem involving an analysis of the rewards and costs that are related to both kinds of behavior, some understanding of what goes on in the classroom can be gained. In general, this approach distinguishes three sources of outcomes in the classroom situation: the rewards and costs related to the intrinsic nature of the activity, the outcomes associated with the achievement of the goals of the activity, and those associated with conforming to group expectations regarding behavior in that situation. We've done a lot of thinking about the first two classes. Probably one of the reasons that Gattegno is so successful with his pupils is that the kinds of things he has them do are intrinsically enjoyable. He tries to cut the cost of rote memorization, for instance. We traditionally try to do something about the second category. We use grades as goals. This works to some extent for certain groups of children, but for many children, it is rather inadequate as a form of motivation.

What we haven't done is to concern ourselves with group-imposed rewards and costs. According to Urie Bronfenbrenner's cross-cultural studies, such rewards and costs have been utilized very effectively in the Soviet Union. It's been my impression that the motivation in the Soviet classrooms that is generated by group-mediated rewards and costs is much higher than what we have been able to achieve in our schools. On the American school scene, you can find such a level of motivation on the athletic field but rarely in the classroom. While I have some questions about whether we want to duplicate this entirely, I'd like to see it become easier to have something like the team motivation in the classroom that we have on the athletic field. One possible way of doing it, I suggest, is to alter the structure of activities in the classroom in such a way that the development of group motivation is fostered.

Oral Presentation

H. Long

I am hesitant to serve in the role of Dr. Backman's critic for it has been quite a while since I was active as a psychologist, either as teacher or researcher. But, even though my seven years as a college president have taken me from the field of psychology, my interest has been a sustaining though cursory one.

As I reread Dr. Backman's paper in the context of this morning's discussion on some of the basic theoretical considerations involved in the learning and teaching situation, a final impression emerged in my mind of the overall role of social psychology in this area. It is that probably the most that social psychology can contribute is in the nature of criticism of learning as a social process. And while this effort might inform the educational experience in many potentially helpful ways, it perhaps ought not be expected as a special discipline to provide answers to the more detailed issues of what takes place in the learning process and how teachers can involve themselves in it more fruitfully and effectively.

Dr. Backman's paper does not address itself to either learning theory or the technology of education, and I believe correctly so. In general, he makes a convincing case to indicate that the attitudes and assumptions with which we have approached the teaching process are at fault because they have created classifications of human beings and expectations about them in terms of their potential for development that frustrate the very effort itself. We need new approaches, new strategies, that are not self-defeating in their end result in order to unfold the human potential. In the light of this argument, I feel that the best thing I can do is to speak in the context of my personal experience for whatever usefulness it may have to our larger considerations in this conference.

I strongly concur with the central thrust of his paper for reasons that seem immediately obvious to me on the basis of my professional career as an educator and my experience as a member of America's classical minority group. In my entire experience as a human being—at least that portion of it when I was conscious of self in relation to others—I have felt, rightly or wrongly, that I was victimized by expectations that were imposed upon me because of my minority racial status. And I say this with an attempt to objectify that experience to the level at which some rational principles can be discerned. Very early in my life, when my family left Birmingham, Alabama and went to Chicago as part of the wave of black, northward-bound migrants, I remember having a teacher of latin, a most energetic and dedicated woman, who was one of the few white teachers left at the Southside school. She was hell-bent on teaching latin to us effectively and it had become for her something of a hold mission. Her reason for doing so, as she often commented to us, was that her colleagues in other schools (practically a hundred percent white) did not believe that Negroes could learn latin and mathematics because both disciplines required a kind of higher order of intelligence than people with my kind of skin pigmentation were supposed to have. Many of us were not quite sure whether her primary concern was to convince those colleagues or whether she was convinced from her experience with Negro students that the racial dogma of the day was in gross error. At any rate, Mrs. Norton was one of the best and soundest teachers I have ever had; and although her mission might have been launched for the wrong reason, it became in her hands and through the power of enthusiasm a positive expectation.

Later in life, after graduating from Talladega College in Alabama and completing a year's master's degree program at a northern university, I went to Miles College in Birmingham. It is quite often in the press because it is a black institution situated in a large urban area that is about 40 percent Negro, and because many of its students were victims of the police dogs and fire hoses that were used to quell the demonstrations against Birmingham's then well-known practices of racial discrimination in the early 1960's. The college largely drew its students from the sons and daughters of men who worked in the coal mines and steel mills. Coming from Talladega College, which was generally described as "over the mountain" and having students drawn from a wider economic spectrum, I found myself teaching students whom I discerned as coming from a background somewhat different from my own. I brought certain unconscious expectations with me about them and about my task, all of which I soon found were wrong. The thing that amazed me was that even though I was required to teach history, sociology, french and psychology—none of which subjects I knew nearly well enough—the students did splendidly in spite of me. Some 20 years later, after a career of teaching and research at Fisk University, I returned to Birmingham and saw many of these former students. Some had gotten doctorates from major universities of the country, some had become physicians, surgeons, dentists, and social workers, and many were teachers and principals of schools. Although my own perception of them had long since changed in the process of our student-teacher association, all of them had far exceeded any achievement I thought was realistically possible. And in the institution I now serve, which has a faculty that is 50 percent white and all of whose students are black, I see the same element of disparity between the expectations of the teachers and the human and intellectual development-potential of the students. With every new group of teachers who come to our small colleges in the south, and especially white teachers, I see a fairly uniform attitude: They expect very little of the students and accordingly adjust their own intellectual demands to fit this expectation. Fortunately, with the good teachers that remain long enough, new discoveries are made.

If there is any single conviction I have arrived at on the basis of all of this, it is that teachers err, perhaps 80 percent of the time, in assessing the student's potential for present achievement and later career service. They overlook the transformations in intellectual functioning and self-conception that take place in any human personality under effective stimulus and growth and that produce new strengths for students to cope with themselves and the world.

One of the presumably rational bases for justifying a low expectation for achievement by minority students has evolved out of the new literature (by now quite old) that deals with so-called "cultural deprivation" as applied to learning. It has become programmed to staggering proportions and constitutes a special vehicle of federal approach to the problem of under-achievement of blacks and the poor, underwritten by millions of dollars. In my opinion it is an educational dead-end; it is another example of the use of a sweeping classification intended to serve a viable educational purpose.

In a discussion of this highly popular vogue, a friend of mine, whom I consider characteristically perceptive and incisive—an unusually able sociologist—commented, "This business of cultural deprivation and the culturally deprived—I've never seen anybody who wasn't born without a culture." This kind of response, I realize, does not dispose of the matter, but it does bring a helpful corrective and perspective to a generalization that is fast becoming a new, though benign, racial ideology. To extend further the point made in my friend's comment, one can say that people are born without a culture, but they certainly are very quickly nurtured in different kinds of cultural influence. The fact of cultural difference, however, does not mean that individuals are automatically limited by that difference in their ability to learn. Differences are often quite minor and they may or may not be significant in terms of the learning situation. If they are colorful, spectacular, and strange, they are frequently overemphasized in their importance to the teacher coming from an opposite class-culture background. Perhaps the most important factor, in this country at least, is the great communality of cultural forms, symbols, meanings, values, and aspirations, as well as the great rapidity and facility with which they are communicated and shared through the mass media.

On the other hand, cultural deprivation theory—at least its most extreme expressions—poses another and deeper psychological proposition. And that is the assumption that certain kinds of cultural influences literally "build-in" corresponding mental constructs and mechanisms that remain permanently and place limitations upon human functioning and adaptability. I remember quite vividly the case of a group of anthropologists who were called upon to advise a program aimed at relocating American Indians away from reservation areas, which were to be inundated in the future by various river dams projected by the federal government. Their discussions were off-the-record and cannot be found in the published literature; I had access to their recommendations because of my connection with the relocation program. The Indians were quite resistant for reasons far too involved to mention here. Those who went to the cities and were aided in finding jobs and residences through the program quite often came up missing and were later discovered to have quietly joined their fellows back on the reservation. In the face of this and related phenomena, these anthropologists came to the conclusion that the re-education and re-adaptation of the Indian in the urban setting in America was a near impossibility. Their reason for this conclusion was the belief that American Indian culture was a kind of literal and rigid entity that resulted in mental and psychological formations that more or less permanently limited adaptability and re-education in the "normal" American setting.

If the cultural deprivation argument resolves into this kind of proposition, it appears to me that the evidence we have is either lacking or highly equivocal. Certainly, at the very least, it constitutes a state of affairs that fails to warrant the level of confidence indicated by such widespread effort at programmatic application. I view the matter with healthy doubt and suspicion for, in some measure, all of us are culturally provincial.

In summary, when it comes to the issues that make the teaching of children of Negro, Puerto Rican, Mexican, and Indian background the subject of so much earnest discussion, it seems to me that what is needed is to free the educational process from the assumptions that engender classifications based upon color, race, class, and poverty. I believe that these approaches present rather bare possibilities for the basic purpose of educating children and assisting them in their efforts toward self-realization. In saying this, I believe that I underscore a major theme of Dr. Backman's most helpful contribution to this conference.

Discussion

Pribram: It seems to me that we are back to the nature-nurture problem. The analogy that I would like to start with is based on an interchange that I have had with Dr. Scriven in the last few weeks. In a letter he wrote me about a manuscript, he said, "You know, people don't use their brains fully."

It is my firm conviction, however, that all people always use their brains to full capacity. What is different among them is the kind of program each has for using his brains. Let me give you an example. When we first got our computers, we sat down and did some programming such that, very often, it took perhaps an hour to run a relatively simple program. Now that we have had the computers for a while, we have rewritten those programs in a more efficient manner and we may be able to get results in 30 seconds that might have taken an hour and a half before. Whereas the computer used to be busy for an hour and a half to full capacity then, it is idle now for most of that time unless it has something else to do.

So to me, the nature problem is partly a difference in capacity. We should freely admit that there are individual differences—not racial, poverty, or such—but individual differences in how much memory capacity people have, or brain stems, and so forth. We don't know what those variables are; we have some idea but nothing has been well established.

The nurture side, however, is quite clear to me. That is, we have different culturally programmed differences and some are better for some things and others are better for other things. Thus we come back to the age-old problem of what are we after. If we are after a kind of culture such as, let's say, Yoga or Indian, for some purposes in the future, programming some of our subcultures in that way might not be a bad idea. They might be more adaptive than, let's say, trying to teach calculus to all children all of the time. We don't know what is going to be useful and adaptive in the future situations of our civilization. I think there is a danger in just arbitrarily choosing our present subculture as having all the answers.

The problems we face are the same as those in play. One of the very adaptive functions of play is that all kinds of skills are developed in an individual that he might use 20 or 30 years later, such as riding a bicycle when there is gas rationing. You never know when what we have learned in play is going to do us a service in the large culture. That large culture is composed of subcultures and let us not eliminate them from our considerations because we don't know what kinds of programs are going to be useful in the future.

We have to make up our minds here what our aims are. If you are making it implicit that all children must cross over to a particular, let's say WASP, culture, and one person doesn't want to do it, then you and he are at odds. But suppose you gave him a choice by saying here are some of the good things about a WASP culture, here are some of the good things about a Black culture; some black children may want to cross over to the WASP culture and some white children, to the Black.

Long: I'm not sure that there is anything that can be called Black culture. The subject is argumentative. I remember that the sociological literature had a long debate over the presence of African survivals in America; some literature has tried to find evidences of the survivals in the life of the Black minority today. If you try to give a uniformity to what you call Black culture, you are giving it a questionable validity. To extend this argument, if there are differences in the large culture, who are the differences for? Are they for, say you? or for the teacher who comes into the classroom and hasn't been exposed to anyone outside her segment of society? or are there differences because differences exist? If there are such differences, we ought to be able to find out what they are.

Blocher: It seems to me that Dr. Backman's paper suggests that we are going to have to change the whole role of the school as a social institution in our society. We have to face up to the fact that to some degree the public educational system has been used primarily to sift, sort, and classify human talents while preserving the myth of equal opportunity. We must get out from under that kind of role or mandate; we must refuse to play it and we must take an alternative position that the role of the schools is to develop human talent.

Sarason: Teachers teach in the way they have been taught and they have been taught in colleges and universities, which in no way differ in this respect from the schools. The question may call for a strategy of change. Let's forget about the schools and start with the universities.

Backman: Dr. Pribram and I talked about another interesting social occurrence that arises out of the fact that we just have not been able to reconcile the fact of individual differences and the democratic ethos. I did not develop the idea in this particular paper but I have in other contexts. It is to me one of the fundamental sources of the anti-intellectualism that is sweeping the country today. As college professors, we are part of this bind; we do not want to recognize that there are some people with more training and perhaps higher skills than other people, consequently, we play down intellectual differences. This is the kind of thing that Vice-President Agnew has played to.

Kohlberg: I think it is fair to say, Dr. Backman, that the bulk of your paper, as Dr. Long said, just shows that psychology is a disease of which it is a cure if you are lucky. That is, all you have brought out is all the horror-labels psychologists have thrown around. From my perspective, at least, what you talked about is the way in which psychology is used to perpetuate injustices in the schools; in many ways, an awful lot of psychological efforts have contributed to at least minor forms of injustices in the school.

In terms of the issues that Dr. Long raised about cultural deprivation, I think there is some meaning to the term. It means that some groups in our society have differential participation in and access to its rewards and resources. The question is whether the schools are devices that to some extent provide the differential access or participation. These are issues that psychology in itself can't handle and social psychology cannot give us a prescription for the cure.

Backman: I think we can; we can point out what are the implications of various practices in relation to the values that we are attempting to achieve. As far as the current controversy over bussing, neighborhood schools, and such issues, what little knowledge we have obviously suggests certain things rather than others.

Kohlberg: The evidence doesn't matter. Whatever the evidence about integration, it would be unjust to maintain segregation.

Backman: You say the evidence doesn't matter but I think in the past it has. What was the basis of the Supreme Court decision in 1954? It was perhaps something of a power shift but knowledge did play a part in it.

Chairman: One of the central issues at this table all day is the question, does it make any sense to make any classification at all? Does it make any sense to teach a teacher any classification system? Or any way to group people or group ideas or subjects? The psychologists ought to be able to hold a dialog on these questions.

Backman: The important thing about individual differences is the interpretation given them. If you say at this point in time that this child can perform better than that child, you are restricting the evaluation to a particular aspect at a particular time and you are not evaluating the child.

Scriven: You know very well that such an evaluation generalizes across years. One thing you can say, and it is absolutely vacuous to have to say it, is that what teachers must not say is, "This child is not too sharp in math of this type now, therefore, he is never going to make a good engineer."

Pribram: How do you avoid getting bad self-fulfilling prophecies that come up? By bad, I mean anything that lowers the individual's capacity from what he could be.

Scriven: Anything can bring about change, including telling a child that he can do it when he can't. We cannot rule out self-fulfilling prophecies; all we can do is to try to reduce the extent of the personal, individual damage that they do. Demonstrate to the teachers models of people who refuse the prophecy as a method of intervention, such as Gattegno. Destroy the commitment to the prophecy by the constant demonstration of flexibility by manifest examples. We've got a school situation in which the curse for making oversimplified prophecies is not on the teacher who makes it but on the child to whom it is made. That's a knotty reinforcement situation and you've got to destroy that.

Backman: Then we are not in disagreement.

Scriven: No. You're upset because I see us all as being attracted by the exact opposite of what has gotten us into trouble. But that only passes the buck to five years from now when we will be in trouble from the opposite position. We will be insensitive to differences because we have denied any differences. It's all right to say things like, "Teachers' expectations can deleteriously affect the performance of pupils." But to go the other way and say that she shouldn't classify the pupils on problem-solving ability and mathematical areas, or that she should not generalize from their problem-solving ability today to how it will be next year, destroys the possibility of rational intervention.

Gattegno: I would like to bring in another point about the problem. In my classrooms, I know that each child is unique. I expect anything from each whatever happens. When I am working with 20 children, all I want is for each to have a chance to work by himself on a task where he can show that he is concentrating on his own activity. When the task is done, then we come together and see what each has done. The children do not compare each other on being better or worse; each is accepted for what he is.

If I give, say, subtraction to the class, they can have 20 approaches to the same problem. If one child has found a way that takes 30 steps and the next child's way has taken three, we do not say that the shorter way is the better. The first child knows that he has spent more energy on the task than the second. He knows that what he is looking at can be compared in his terms—in his terms—not mine. I do not tell him that he is going to be wrong forever because he took

30 steps to the other child's three. Perhaps next time, instead of 30, he will take five.

The group contributes to the individual but each individual has contributed to the group. We do not lose the uniqueness of every one; the group quality is an addition. Technically speaking, you can make children learn to appreciate the abilities of others and to emulate them. And so the process of growth proceeds through intercourse and respect for each other. The children have an intimacy that comes from the fact that one child can learn from another today and, perhaps, next time, the second will learn from the first.

The atmosphere of the classroom is totally different from that of the old style. The teacher has a new approach to the children as people, as persons embracing each other. We do not consider an adult who chooses to become a social psychologist better or worse than one who has chosen to become a psychiatrist, and we must give this same acceptance to our children. If one child produces 300 correct sums and another produces 10 correct, each is 100 percent correct. The only difference is that one is swifter than the other—today. How do I know which will be swifter in 10 years' time?

Scriven: Dr. Gattegno does not stick a child with the idea that he cannot possibly change his performance level. He goes for the data feedback because he wants to predict what will happen if tomorrow he continues to talk at the same level. He is making a very refined, sophisticated discrimination in his predictions, but it is not rejecting prediction. There is no way you can go ahead without it. I've just said that we must take the boring line that you've got to be very careful about what behavior contingencies you make rest on your prediction.

Lindsley: I think we've got to teach our teachers to work with uniques, to expect uniques, and to anticipate unique solutions to problems. We can handle uniques; we've done it with all kinds of things. Biologists don't give you the range and the distribution of the mammals on earth —that would be something that doesn't exist; they show you the hummingbird and the elephant.

Scriven: But no one is denying it. Everybody knows that the rhetoric of the unique child has been with us since schools began. We've been classifying children for years and still saying that they are unique.

Young: I'd like to ask Dr. Gattegno a question. I know from some observation of his disciples that they can walk into a classroom and meet a group of children for the first time and be very, very successful without having been told anything about the children in advance. As a matter of fact, I also know through observation that the same success can occur even when they have been given misinformation about the children. My question is, what concerns you as a teacher facing a group? Of what concern is the makeup of that group to you as a teacher?

Gattegno: If I am the ordinary teacher, it doesn't make any difference. If I am giving a demonstration, it may make a difference because of whether I have to prove something or just work with the children. If it is the latter, I don't have to prove anything.

Young: I wonder if Dr. Backman might see an implication here of some disagreement between Dr. Gattegno and himself in regard to the importance of the climate of the school relative to the achievement of the children in the school. As I understand it, Dr. Backman's definition of climate included the kinds of children who are in the school.

Backman: As far as we know, the most important determinant of the climate of the school is that which the children bring in from their homes and surrounding areas. Less so are the faculty, physical plant, and this kind of thing.

Gattegno: That's not the point. In Harlem, we worked for two years at P.S. 133. In that school, after several months, visitors started coming in and they said, "Of course! with that discipline, who can't teach?" But it was the discipline of work, not the discipline of imposition. And in one school this year where we had the children of the very rich who were extremely free to throw chairs and do other such things, after three weeks there was a complete change of climate because the children were busy, happy, and involved in all they were doing. There was no need for the teacher's aide—the parents had thought 22 pupils for one teacher was a lot—except to take the children while the teacher makes a study of the lesson that went on.

What we did was to make the children happily involved in their work.

Backman: What you are saying is that task-activity went up and what you did, as I would interpret it, is to increase the kinds of intrinsic satisfaction the children were getting out of the task activity.

Gattegno: We never reward but we never tell anyone anything that is wrong about himself, either. If he has made a mistake, he has made a mistake. But we never say, "Jolly good!" We never give any reinforcement—absolutely none!

Backman: I still think you changed the contingencies of the situation. We can say that in the situation, Dr. Gattegno drastically changed the outcomes associated with the task activities rather than the social climate of the school, in terms of the students' expectations, their values, or the kinds of behavior that get social approval, and this kind of stuff. One clue is the social mix in the schools. The implication is that we take that into consideration and create an optimal social mix. Other things can be done, too.

Chairman: Let me ask Dr. Gattegno a question. What do you teach your disciples about meeting students that allows them to set aside all kinds of misinformation and attend to the processes that are going on in such a way as to produce the results to which you are committed? Apparently other people can't do that. You and other people present suggest that we use information to classify and meet students inappropriately. Now, somehow, you get people to set all that aside.

Gattegno: My colleagues who do this work do it differently from me. We are all different and sometimes it works and sometimes it doesn't. When it doesn't work, we learn a great deal; when it works, nobody learns anything except that it works. So let me take a situation that I know. I know what I do. I get into the class and I have no expectations whatsoever. The other day I walked into a school in Harlem and I was given a class of 7-year-old children who just wouldn't do anything. I played "catch-my-thumb" with them. The teacher came in to see me teach reading and I was saying "Catch my thumb! Catch my thumb!" Once I established this relationship that I was capable of catching their thumbs and they had some difficulty in catching mine, I asked, "Who wants to play another game with me?" Seven or eight of the 20 children came with me and I worked with them. The others were free to go wherever they wanted, but they slowly brought up their chairs and joined the group. They wanted to be with it. So when my colleagues see me do these things, they also get hints that you don't have to take the attitude, "I must succeed." I don't have to succeed for if I don't, what's the shame?

Sarason: The word expectations isn't mere semantics. If the children are going to respond to Gattegno's approaches, he has to hook them, by which I mean he has to become important, interesting, stimulating. But built into that is a set of conceptions about how you handle a group.

Gattegno: And also there is my respect for them. If they don't want to work, I don't care what people think of me. Are you prepared to enter a classroom and leave without giving a demonstration? I am prepared to do so.

Lindsley: We try to teach this thing in workshops and still keep the children unique, the teachers unique, and the child-teacher reaction even more unique. And the teachers keep saying, "What do I do?"

Sarason: Those teachers are asking not how to do it but, "How should I think?" That's what they are saying. I've been through that bag, too. The idea is that you had better be prepared to try anything and everything in order to get to that point.

Scriven: We have listened happily to these two people who have great stuff teaching and have apparently been very successful. We're learning something. How do we get this across to the teachers we want to train? That's a fundamental question for the purposes of this Conference. Well, let me make some crude suggestions. First is the audio-visual case study with analytical comments. That is, what I would like to see us doing in teacher-training systems and in summer workshops as well, is much less theory, much less reading as such, and much more of the following kind of things: Three minutes on the screen of a teacher in some classroom some place. The group is asked what they think of it. Now, a number of hot-shots comment on it from radically different points of view. We suddenly get an increase in perspective on that straightforward performance, which, to many of those teachers, is what happens every Wednesday.

We had Wiseman up to the Whitehead Fellowships to discuss his film, "High School." There are clips of that that would be marvelous to use. Suddenly you begin to get the group to see the conventional as the repository of possibly radical, fundamental treatments. Now, the next time, we show them one of the radicals doing his teaching, beginning with a classroom that looked like the first and transforming it into another one. And then we show them another radical transforming an apparently identical classroom in a quite different way. So the group begins to get the idea not that there is one way to do it, but (a) there is a way to do it—in fact there are a lot of ways to do it—and (b) all the theories as far as we can tell are consistent with this. The theories, although they may contribute to understanding and one of them may turn out to be much better than others in the long run, are not really working-men's theories. What you need in your hand are the models, and preferably a lot of them, in the sense that there is a lot of them and, in particular, in the sense that there is no situation that is hopeless.

What I am doing is hardware talk. Shouldn't we perhaps some of the time be asking ourselves the question, "What do we want in that teacher training institute?" Not the ones we are going to run ourselves, but the ones we want to influence by our writings or the productions of this Conference. I'm suggesting something very anti-theoretical. I think theories are a lot of fun but the way I hear it they are the inspirational messages of the Messiah and they are not the prediction-generating devices of the physical scientists. In medical-school reform, I am trying to get the whole curriculum back to, roughly speaking, audio-visual training that begins the day the student gets there. He's put into a dark room and on the screen he sees a picture of a door opening. It is the door to his office as a practising doctor. A patient walks in and says to the camera, "I'm sick. Here's the problem." Then you cut it off and you say, "Prescribe." On this day the student is 20 years old or whatever the age is. You make him do it and you pick him up from there.

Lindsley: The only thing I have against your suggestion is that we found that audio-visual is not enough. People actually have to have their hands involved, and everything else. I think the biggest thing involving teacher's training is the responsibility for the daily hours and the life of the child. In other words, it is a heck of a lot different to be teaching in a surrogate system or watching TV, from being out there on that horrible first day in September when these 20 little children come running into your classroom and it isn't TV film anymore. I think it is much better to start the training with actual children. We're not out of children; we're low on TV and high on kids!

Chairman: To help us hold the session firmly in our minds, I've asked Drs. Birch and Dalow to summarize their impressions of what has been said here this afternoon.

Birch: Dr. Backman started off by discussing the meaning of social psychology with respect to possible action in the schools and he made, I think, six points.

1. In the new view of intelligence, intelligence is educable.
2. Self-perception conditions one's own performance.
3. Perception of others influences our expectations from others.
4. It is potentially dangerous to express developmental progressions in terms of stages, since the stages may be considered by some to be predestined with movement through them a fore-ordained fixed schedule.
5. The climate of a school, in a social-cultural sense, is determined by what children bring with them to school, which itself is a strong correlate of achievement.
6. Finally, the classroom behavior of pupils may be defined in terms of the ratio of task to non-task time. It seems to me that it was suggested that a fruitful approach might be to improve that ratio through optimizing task-interest, teacher-awarded and group-sanctioned rewards with, particularly, the last being worth a considerably larger amount of examination than it has had in the past.

Turning to Dr. Long, it seemed to me that he elaborated on three points:

1. Social psychology—and maybe all of psychology—may have a useful role primarily as a constructive critic of current educational practice.
2. He used personal experience to illustrate and to verify that self-perception may condition performance and that our perceptions of others may influence our expectations from others, but that the phenomena are far from completely lawful in a predictive sense for all persons.
3. He pointed out that the heavy emphasis upon studying cultural deprivation as a concept is a dead-end street. What is needed is the study of the different cultures and their impacts upon learning styles and upon achievement potential. Further, what is needed are attempts to frame educational strategies to capitalize upon cultural characteristics rather than to be limited by cultural patterns that may, at first impression, seem like closed systems, when often they really are not.

In the discussion that followed, I saw about 10 points.

1. There are individual differences in human capacities, which we all have known for a long time, but these differences are still not fully or perhaps adequately known for educational purposes.
2. Is the present dominant culture the one we want to emphasize, eliminating all others?
3. Are there distinguishable differences in what are called American sub-cultures, or are the seeming differences in the eyes of the beholders rather than in the cultures themselves?
4. The weaknesses of university teaching as models was talked about, as it always is in meetings like this, and it was agreed that it is not a very good model, as is always agreed in some meetings like this.
5. Next we went on to a question regarding injustices—we got back a little bit again into the moral education question. Are injustices in the schools perpetuated in the name of psychology? Has a pseudo-psychology of education been interposed between the learner and the tasks to be learned and, at the same time, befuddled the teacher, principal, school board, superintendent of schools, and parents?
6. Moving from that, we went to a statement to which I may be doing an injustice here. It seems to me that it was the use of contingency-management styles of accountability with students for use of their time. It was pointed out that the success of such an enterprise depends upon not only short-run (daily) balance sheets, but long-term ones as well.
7. We moved then to the management of competition, succeeding and losing, and the study of such management was recommended as the proper domain in school settings for social psychologists. There was disagreement on the primacy of such issues, as well as on the rights (or powers) of others to manage.
8. It was pointed out that the psychologists of the past very effectively taught parents and teachers to believe that categories are proper places in which to put children. Now psychologists reject what they taught, but they are uncertain about what to substitute or, if not to substitute, what different or new concepts to teach.
9. The usual approaches to educational prediction were talked about with respect to decision-making and it was pointed out that they tend to focus on group or class behavior rather than on each individual child's progress toward personal fulfillment. Wide differences appeared here on the meaning of the class versus unique points of departure, and, when pursuing either line, whether psychologists take into account efforts to convert theory into action in the schools.
10. Finally, it was suggested that if great styles of teaching by individuals can be located, the teaching performances should be recorded. The recordings should be used as varied models and examples to stimulate present and prospective teachers to adapt the great teaching styles to their own capabilities and potentialities. This kind of ap-

proach—simulation or role-playing—has proven of questionable value in the eyes of some and of significant value for others, based upon personal observation.

Balow: I'm glad that Dr. Birch did such a good job of responding to the content because I want to talk about the processes, and about the whole day, as long as I have the chance.

Someone has said that education went wrong when it rejected rhetoric for psychology. I believe that what I heard here today reinforces that view. In Dr. Gattegno's comments and general presentation, I think we saw an artist at work. The unanswered question, I believe, is how do we capture and export that beautiful style of artistry, that tremendous skill and talent? How do we teach that skill, that total style, that way of responding, to others who are perhaps less inherently talented and reactive and skilled?

In Dr. Kohlberg, I saw a scientist attempting to explicate a theory that might be useful in the schooling process if it were adequately translated for the artist. Many, in particular Dr. Pribram, were asking for attention to and decisions about the goals, aims, and ends of schooling. Thus I believe there is out of that process a difference along an artist-scientist continuum or, if you return to my opening comment, a rhetorician versus scientific-psychology continuum. What was the difference regarding policy versus operations and methodology? Throughout there seemed to me to be a great deal of ambivalence about individual differences in this total group, whether and to what extent they should control the organization, behavior, and expectation for pupils; not only the extent to which they should but how and in what manner they can be utilized practically to do so.

This afternoon, I believe, we returned to the same themes. Dr. Backman described three ideas that are useful for thinking about schools. Two of them were operational in nature, it seemed to me, and could be subordinated, however, to a more theoretical-policy notion of intelligence as nature or nurture or some combination thereof. The climate idea, as an operational and useful practical idea for schooling was subordinated to the political-theoretical aspects of the question of integration. The ideas for schooling that I thought were the most salient—and I think his paper makes clear that they have been in the past the least used—are the work-group ideas. They were greatly subordinated and elicited little direct comment from this group, although many commented on individual differences again, which could perhaps be forced into that particular issue. I was interested in Dr. Blocher's statement, which I thought got pretty strong agreement from the group: That was a clinical-sense kind of judgment and obviously not one that had a lot of observable verbal behavior, that the classrooms are organized to ignore or to deny the need for socialization skills, or to reject or at least not pay the kind of attention that is necessary to the increasing demands for intimacy in culture and society. I was interested in the response of the group to Dr. Pribram's belief that it is better to deny a college student's existence than to admit a failure in a transaction. I don't know that he would want to defend that position tonight and I think if my comment were to cast him in that role, I would be painting him into a corner, which I don't believe he would accept.

I am interested in the group's response to it, however, particularly in that none of us recommended an alternative of any kind that seems to be the heart of the task for which we are here, that is, how do we change our structures and behaviors to be more effective in schooling, not how do we continue expecting the students to adjust. If the student doesn't match up, he either doesn't exist or he fails. Now there has got to be an alternative in the middle. I think that that is what we are here to talk about and I think we have neglected it. We cannot, I think, only consider this question in terms of others, that is, putting it onto the elementary-school teachers that we work with, or that we teach others to work with, on how these elementary-school teachers should change. We must, indeed, think about how we can change what we do in our preparation of school psychologists and educators and others in our bailiwick We seem as a group to have evolved few common agreements about the issues and we are obviously finding it very difficult to come down to the practical matters involved in making psychology more effective in schools or using the ideas of psychology to improve schooling of adults or children. Yet, I think, that's what we are here for, tough as it is to do.

The Beautiful Future of School Psychology: Advising Teachers

Ogden R. Lindsley

I have two suggestions to share with this Conference. The first, teacher advising, is a way of improving the help given to parents, teachers, and children by school psychologists and is the subject of this paper. The idea has been independently developed and added to by many school psychologists (most recently, Beck, 1970; Carberry, 1969; Dansinger, 1968; Hodge, 1970; Hunter, 1970; Seidman, 1970; Taylor, 1969). The second suggestion, what I call "precise behavioral management" in general and "precision teaching" in particular, is described and discussed in my oral presentation. The first is a practical suggestion for economical teacher advising in the public schools of today without additional staffing or funds. It has been developed over the past five years by tens of advisers (e.g., Kunzleman, 1970), hundreds of teachers and parents, and thousands of children.

School Psychologists as Teacher Advisers

In a survey of Minnesota school psychologists, most said they did testing and thought they should get into the classroom and advise teachers (Dansinger, 1968-69). In my informal survey—talking to hundreds of school psychologists around the country over the past three years—I have found that many have advised teachers (Hunter, 1970) and others are advising teachers almost exclusively (Beck, 1970; Seidman, 1970). The idea is not an especially new one. In *A Career in Psychology* (A.P.A., 1970), inservice training and consulting with teachers are listed as the second function of school psychologists, following research, while testing is listed as fifth and last in importance. Yet, in the Indiana *Handbook on Teacher Education* (Bulletin 129), testing is listed as the most important function of school psychologists.

In 35 states, school psychologists are labeled as such (71%) with five adding adjectives (specialist in, public, supervising, standard, professional); in four states, school psychologists are labeled by the testing function (psychometrist, diagnostician, or psychological examiner) (Traxler, 1967). The identification of school psychologists with testing functions, however, has given the label a somewhat limited and pejorative interpretation. Many practicing school psychologists have told me that they have trouble overcoming the label, expressing themselves in the following typical statements:

"It scares parents and teachers and children. (There are only two in the district. I was the first.) They come in with their knuckles white, faces tense, and prepared for the worst. . . . When I go to see a child, they think he is already sick." The emphasis of the label psychometrist "is too much on testing. I think we should just be labeled by what we do . . . advise or counsel teachers . . ." (Beck, 1970).

"We should advise teacher-parent teams . . ." (Hunter, 1970).

"Training is a bad word. . . . [It] implies low-level teaching like manual training, toilet training, driver education. It shouldn't, but it does, so we just might as well accept it. Why not advising or consulting with teachers . . ." (Seidman, 1970)?

Recasting the major role of the school psychologist from tester to teacher adviser need not increase the operating costs of a school district. By meeting teachers in weekly or twice-montly classes of two hours' duration, and limiting the teachers to two minutes for presenting each problem or project, the following teacher advising ratios have been found to be possible without changing psychologist or teacher staffing:

Denver City Schools, Denver, Colorado (Hodge, 1970)

School Psychologists	14	
Teachers	3,500	1:250
Children	96,000	1:28

5 weekly meetings of 60 teachers each, or 10 meetings (every two weeks) of 30 teachers each

Broward County Schools, Fort Lauderdale, Florida (Seidman, 1970)

School Psychologists	30	
Teachers	5,000	1:166
Children	100,000	1:20

5 weekly meetings of 33 teachers each.

Training Teacher Advisers

School psychologists must have respect, love, and compassion for not only children and parents but also for teachers if they are to advise teachers successfully. An excellent way to gain respect for the classroom teacher is to have been one, which, in turn, gains her respect. The principle involved is universal, regardless of the profession. The polish of West Point does not earn the young graduate the respect of enlisted soldiers. The men give their feelings away when they call the young graduate a "shave-tail," the old cavalry name for a raw horse that knows nothing. Soldiers reserve the name "mustang," after the wild and knowing horse of the plains, for an officer who has come up from the ranks and deserves their respect.

Today, only four of the states require teaching experience for school psychologists and an additional five require teachers' certificates without experience beyond the student-teaching requirement. A large majority of the school psychologists with whom I have talked suggested teaching experience as part of the training for school psychologists who will act as teacher advisers. "School psychologists should have teaching experience, but the Ryan Bill (AB-122) in California no longer requires teaching experience . . ." (Hunter, 1970).

Henry J. Pennypacker, an accomplished psychologist, ex-chairman of the department at Florida, and now an accomplished teacher adviser and president of Precision Teaching of Florida, considers classroom teaching so important for a teacher adviser that he spent his 1970 Christmas vacation teaching in an elementary school in Gainesville, Florida.

In addition to classroom teaching experience, the training of teacher advisers might proceed along the following paths:

1. They should be trained by being coached while they are advising teachers in a public-school system, and they should be improved and evaluated by the teachers they are training. The ultimate score is the improvement (acceleration) of the children currently being taught by the teachers they are advising.

2. Meetings with teachers, other seminars, and more didactic classes should be conducted in public-school rooms, saving space and money, and adapting the trainee teacher advisers to the schools in which they will work. This environmental emphasis might also break the stimulus control of the college classroom over the theoretical and lecturing style of teaching that many of their professors will have a hard time changing.

3. Their curriculum should be aimed at the future of teacher advising rather than at its past. Course titles like "The future of teacher advising" will help break this fascination of the academics with the past. The trainees should get used to walking through their lives with their eyes and ideas slightly ahead of where they are now, rather than on the trail behind them.

A New Approach to Testing

It is now illegal in six major cities—Los Angeles, New York, Boston, Chicago, and two others, to test children. As a former psychologist, I am literally ashamed that psychology's house had to be put in order by grape-pickers, Panthers, and other lay groups. It is fast becoming immoral across our land for normal, educated adults to gang up in staffs of 3 to 12 on one child with classroom problems and to fight over the label they will indelibly tattoo on his cumulative school record. It is even more immoral to force a dedicated, young person, who has become a school psychologist to help children, to spend his days testing and "tattooing" children because of outdated methods and laws, when he would rather help teachers and children in the classroom.

The world is moving so fast that soon it will be immoral to make children work in labeled classrooms or live in labeled buildings.

Since it will take too long to change the testing laws in many states, and we probably must reduce the testing backlog of many school psychologists, the only practical and temporary solution that I see is to take a peek at the child in the classroom and estimate his IQ. An actual test is reliable to only ± 10, and most school psychologists can estimate it to ± 20; few will ever look at it anyway, and even fewer will ever do anything after they have looked at it.

Estimated IQs could be entered in the child's cumulative record in the following or any other way that might be fancied:

IQEA 70-95 (IQ estimated anglo 1970 to be 95)
IQEB 71-110 (IQ estimated black 1971 to be 110)
IQEE 70-135 (IQ estimated eskimo 1970 to be 135)

Practical Operations

". . . I go into the classroom or home or meet them in a neutral place like the cafeteria or gymnasium. My psychologist's office is bad news for both of us. They are often scared, and I catch myself doing the old clinical thing . . ." (Beck, 1970).

Suggestions for office space for teacher advisers include the following:

1. Individual telephone lines for checking crisis projects with parents and teachers on a daily basis, if necessary.
2. A codaphone ($800) for each adviser so he can call in at any time and check his accumulated calls, call back, if necessary, and change the answering message, if he wishes.
3. Desks together in a large room like insurance agencies salesmen's desks to increase interaction among teacher advisers when they happen to be in the office at the same time (mornings usually). It will also make it more difficult to maintain their old private office consultation behavior (treatment, testing, counseling, etc.).
4. A state car or mileage allowance for each adviser to facilitate classroom and home visits is a must.

The money should go into on-site visits and telephone communication rather than into impressive office suites and waiting rooms. A state car and telephone should cost little more ($175 to $200 a month) than the overhead on many plush, air-conditioned offices.

The following daily schedule is a sample that permits a teacher adviser to serve from 300 to 600 teachers on a regular basis—once a week or once every two weeks—within a 50-mile radius of his office:

HOURS	TIME	FUNCTION
1	9:00-10:00—	Phone calls to parents, teachers, agencies re unique and crisis projects.
2	10:00-12:00—	Classroom and home visits re crisis projects.
	12:00- 1:00—	Lunch with other advisers or teachers from a building.
1	1:00- 2:00—	Drive to school for routine weekly teacher meeting.
½	2:00- 2:30—	Visit a classroom or two.
½	2:30- 3:00—	Set-up gym, cafeteria, or auditorium for teacher meeting.
2	3:00- 5:00—	Teacher Advisory Meeting.
1	5:00- 6:00—	Drive back to home office or home.
8	Hours Total.	

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Oral Presentation

O. R. Lindsley

My discussion this morning is really the second part of my presentation. The first part was my paper, which contained some specific suggestions of things that school psychologists may do in the future.

The second part of my presentation is about a system of working with children and advising teachers that we have developed over the past five years. It is constantly changing through almost monthly contributions; the last was made by a student teacher in Great Falls, Montana, two weeks ago. In order that the system may be constantly upgraded, I do a lot of traveling to get the feedback because when a teacher criticizes a position or makes a substantive suggestion to me, it is apt to go into the system and filter all the way down very rapidly. And this is how the system has developed.

The system itself is summarized in the following description, which was prepared for a symposium with the senior-level personnel of the National Institute of Mental Health:

> ## PRECISE BEHAVIORAL MANAGEMENT SYSTEM
>
> This descriptive system was designed to increase the precision (× 10) and efficiency (× 10) of the applied behavior fields of Education, Psychology, Psychiatry, Social Work, Medicine, and Nursing, and at the same time provide precise communication between these professions and the parents and children they serve. The system is now in its fifth year of development and is beginning to reach its goals.
>
> The system uses a common:

Language	Basic English
Record	Frequency of Performance
Datum	Acceleration of Performance
Chart	Daily Frequency (ratio-ruled)
Storage	Behavior Bank (computerized)
Communications	Behaviorgrams

> The extremely large storage capacity of the high speed computer permits researchers and practitioners to share their basic observations (raw data) for the first time. Thus detailed questions can be answered by the computer in equal detail, eliminating the need for generalizations. Also, tomorrow's questions can be answered from yesterday's data.
>
> The core of the system is the standard Daily Behavior Chart which can be easily kept by kindergarten children. This ratio-ruled chart shows speed, accuracy, and improvement of any classroom academic skill or behavior problem. Behavior frequencies as high as 300 per minute or as low as 1 per day have their places on the chart.
>
> Since behavior frequencies grow and decay in multiples,

> outcomes of current teaching procedures can be estimated by children and teachers at any time in the classroom by merely drawing straight lines on their ratio-ruled charts.
>
> The Daily Behavior Chart also provides additive and homogeneous variance of behavior frequencies, both within a child (from day-to-day) and across children in the same or different classrooms.
>
> This inexpensive (under 10 dollars per child per year) and practical system for directly and completely recording classroom performance provides Education with a measurement system which can be used to analyze and manage the unique qualities of each learner, as well as to summarize and evaluate the performance of large samples of school children. Daily classroom performance norms are beginning to accumulate in the Behavior Bank (6,000 projects stored to date*).
>
> The system has been taught to elementary school children in a few days, to teachers in ten weekly three-hour meetings, and to doctoral level professionals in five full days.
>
> Ogden R. Lindsley, Ph.D. 13 October 1970

The × 10 increase in precision is a mathematical statement that we found when children recorded their behaviors on our charts; the statements we could make about their behaviors were ten times more precise than any that could be made on the basis of weekly testing, or recording daily percentage correct, or any of the more traditional measures. When we originally got going in 1965, we found or suspected that the most important part of behavior modification in the classroom was the daily chart. It's a sort of daily feedback concerning each child's unique performance.

Initially, we had certain teachers make their own charts, which were as unique as the teachers themselves, and we had an awful time sharing them. We could learn from our own charts but not from each other's. Without any special training, all our unique teachers made what I started out calling interval charts, although the best term we have for them now is "add-subtract": As you go up you add a certain amount for the same difference and as you go down, you subtract the same amount for the same distance. Most of our time was spent talking about what went up the left of the chart, the ordinale.

For 60 teachers, we would have as many as 37 or 40 different up-the-lefts: minutes spent looking at arithmetic, number of problems correct, number of problems correct divided by number of problems incorrect but not converted into percentages, percentage correct or wrong—all these kinds of things. We said we've got to have a chart on which we can put anything that we might want to have a child chart in the classroom. So we went to a standard chart and the teachers designed it. It went from zero or one a day to the highest performance frequencies that we could think of, three or four hundred a minute. We ended up with a multiply-divide chart that at first seemed very scary. As you go up, you multiply; as you go down, you divide. These words were not easily arrived at. Initially, for a year or so, we called them 6-cycle semilogarithmic graphs until a good friend started using the phrase ratio-chart, which was much better. Multiply-divide is the phrase that we quite recently adopted at Kansas. It is nice because it ties in with elementary-school arithmetic. As you go up from 1 to 10 you are multiplying by 10, from 10 to 100 you are multiplying by 10 again; if you go from 10 to 20, it is ×2, and from 20 to 40, it is ×2. When you go up an equal distance, you multiply; when you go down an equal distance, you divide.

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* 8,000 at the time of the Conference.

With this kind of chart, our teachers are spending no time talking about the chart and all their time talking about what's inside. When they used to make up their own charts, they would spend most of 20 to 28 minutes explaining their charts; now, however, the chart is like a frame that washes into the background and the child's behavior can be seen immediately. All the teacher needs is two minutes to share it! So by going from 20 or 28 to 2 minutes, we have multiplied teacher-experience sharing by 10.

In a two-hour meeting of 60 teachers, each can present a child's chart and get feedback from her peers if she uses this fast, efficient way of doing it. It means that at Kansas, I can give my in-service teachers five years of experience in one semester. The increased precision is this kind of charting over percent correct. The two multiplied together give you ×100 and ×100 is not something to overlook.

A new thing has happened recently in that we have found that inner behavior can be charted just as reliably as public behavior. I have a chart of the hate feelings of a Mr. B. at the U.S. Federal Medical Center in Missouri. For two weeks he was having, according to the beginning of the chart, hate feelings at 2/100 minutes and in about a week they accelerated to 4/100 minutes, about a ×1.5 or 15% increase per week. Mr. B. saw the acceleration. When he was asked if he wanted his hate feelings to increase, he said no. So a change had to be made and he dreamed up his own but didn't tell anyone what it was. The change was successful; it produced deceleration and in three weeks his hate feelings were down to zero. Recently, I found out what his change procedure had been and I wrote it on the chart: For every hate feeling—that's a 1:1 arrangement—he thought of his sister's children whom he loves very much. That's a wild procedure because, according to reinforcement theory, the thought of the children should be an accelerator; it should reward the hate feelings and produce an acceleration. We use this project to show that things can be counted fairly reliably. The only thing we don't know is whether it is all a giant schizophrenic put-on. But if Mr. B. honestly shared his inner life with us, it followed the same laws as recorded actions on a chart: the same amount of daily bounce and the same rate of recovery.

In order to advise teachers, I travel with about five or six hundred charts so that I can produce what they would like to see. Here is a chart of a teacher of foreign languages in a regular school who accelerated her use of French expressions in the classroom. To insure that she was not just talking a lot more, she also charted the English expressions she used in class. Charting alone helped her reach her goal; she used no other procedures. Meanwhile, across the hall, a teacher who had heard of the inquiry teaching theory charted the number of student questions she answered with an inquiry question or with a direction. How did she know she was not getting more noisy? She charted the number of questions she answered flatly and she went from 50% inquiry to 90% or 95% inquiry in about 10 weeks. This is what the teacher should be doing to improve her teaching.

I'm wearing one type of counter on my wrist that is like the ones worn by the teachers I just talked about. The first would push the counter on her right wrist every time she used a French expression, and every time she used an English one, she pushed the counter on the other wrist. Or, if a teacher doesn't have counters, she can assign the counting task to a member of her class, or she can stick a strip of architectural tape on her sleeve and make marks on that. At the end of the day, she looks at the count—23—and since there are 300 minutes in the school day, she divides 300 minutes into 23 and enters that number per minute for the day on her chart. The record is frequency of performance.

We found that the language we have to use is basic English. Even if we learned to use teacher talk with a little curriculum phraseology, the teachers cannot teach the chart to the children without doing a translation into basic English, and sometimes it is hard to go from one to the other. So we use basic English, like multiply-divide rather than ratio chart, to get a system that can be understood by parents, teachers, and children.

Sarason: You have developed a way whereby teachers, children, or patients can record data. Why are they doing it? How do you get a teacher to try to do it?

Lindsley: One way is to give a workshop and then 30 percent go into it. Another way is, it spreads across the hall. I am beginning to think that one of the quickest ways is to put it in the hands of the children and have them teach the world. Still another way is, the principal orders it. But exactly how you motivate people to start this way of more precisely approaching behavior is a very difficult question with which we are struggling.

Pribram: What do they get out of it?

Lindsley: They are guaranteed one hundred percent improvement in their behavior. If they pick a behavioral goal, they will get to it.
Pribram: The charts provide feedback to know where you are.
Lindsley: To the child, right in the system without going through the counselor or computer and around back. The best analogy I have of charting is that it can be used like flight instruments in an airplane: It will tell you when you are heading for trouble and very soon, within one or two weeks.

Let me give you an illustration of an inner-city tutorial project where we are trying to help children with severe reading difficulties. High-school children aged 14, 15, or 16 years were trained in about four hours to use the charts and to tutor elementary-school children 2, 3, and 4 years behind on graded reading, working afternoons in church basements. The charting is not secret. Here's a chart of Jimmy M., age 11, reading at McMillan level 5; his rate of correct reading went down and rate wrong went up, which means that the longer he stayed on his curriculum, the slower and less accurate he became, and his comprehension, on which we have scores, decreased also. Up until we saw these charts, I always thought that the worst education could do was waste money and keep kids off the streets, and the best it could do is teach. But Jimmy's chart was a case of textbook violence.

The little high-school tutors didn't have enough books to read from so on their own they started children like Jimmy reading from the local newspapers. None of us knew they started it. Here's the chart of Jimmy reading from the **Kansas City Star**; you can see the acceleration. We know that his decrease on the graded reader was not due to his being sick, staying up all night looking at TV, skipping breakfast, or that sort of thing. The two curricula were compared, each used on different parts of the same day consistently. We had the same tutors and the kids knew enough never to have him read from a newspaper first so the difference was curriculum specific.

Now the standard approach is to try three curricula. We are beginning to think it is almost criminal to have a child reading on only one curriculum because uniquely, you won't know whether it has lost its power. So we usually use three. In teaching teachers, the model we use is air and ocean navigation: Get your curriculum, get your children set up, sail for a little piece of time, then chart your course and estimate where you will end if something doesn't change. So that's the chart and the key to the whole system.

Information flows usually from the child to the teacher, to the curriculum adviser, to the assistant superintendent, principal, school superintendent, to the experts, and it ordinarily takes years for the information to get from the child to the expert. With this system, chart information goes up through the hierarchy to me very fast. I don't go to the child, I go to the child's teacher or to her adviser. We also built the system in what I call "in line." There are two ways to build a locomotive: to try to build one that will pull 10 cars or to build one that will go fast and have power to pull the cars. This system was built with the whole load on it. I tried to make sure that an adviser could handle 20 to 100 teachers. The system was built with the idea of having 30 teachers in the room for a meeting of one or two hours. If you build the other way, you and three teachers, you build in all kinds of problems when you have to multiply the number of people by 10. We built this sytem so that theoretically one or two hundred people like me could train two million teachers in service and more. It won't happen because of the slippage in the system, the resistance, and all the communication problems that get in the way.

When I am teaching teachers, I do it differently than my presentation here. In the beginning, I used to say things like, "We must individualize procedures; we must talk about children as individuals." It didn't seem to have much effect. Then I started talking about the children by name, such as Shari, Leola, and Ken. And that's the way I talk about individualized or unique instruction now. We can't teach Shari the way we learn to teach Ken, and that's different from the way we teach Leola. And we can't teach Shari in January the way we teach her in September. You can't expect one child to perform in the same style month after month or to perform in the same way as any other child.

We use stratagems like, "The child knows best."

Scriven: What makes you think he does?

Lindsley: That's our way of saying that child-selected curricula often work much better than teacher-selected curricula. I don't mean child-designed; we haven't got into that yet but I am beginning to suspect it may be the next step. It is best for the child to do his own charting, pick his own targets, select his own rewards and punishments.

Scriven: Do you have any data on that?

Lindsley: Yes. First let me give you some background. We use the word behavior to indicate the individual whose behavior is on the chart. The manager is the person in daily contact with the behavior, a teacher, parent, or peer. The adviser is someone in more remote contact, like the school psychologist. Here is a case of adviser wrong and manager right on the subject of Tommy's talk-outs. Since the adviser had read the literature, he advised the manager, May D., to extinguish the talk-outs by ignoring them. On the chart there is no real change with this procedure except for two low days. The adviser gave up and asked Mary D. for a suggestion. She said, "I think Tommy and I will just sign a contract to have this many talk-outs a day." They both signed the paper and the result can be seen in the deceleration that followed.

Scriven: I really have two sorts of inquiries. First, if you are going to support the generalization that the child knows best at all, it would have to be on the basis of some sort of large comparison. Second, the slogan strongly suggests to me that the student knows best about what to do where the choice is between curricula—that was your interpretation of it—as opposed to constructing the curriculum. Now, "between curricula" implies a very wide range of choices; amongst other things, not doing math but doing English. When I raised the question I was interested in what makes you think that the student is right to choose not to do math or the hard things?

Lindsley: The slogan is a working one and we use it up the ladder. The teacher adviser knows more about the district than the supervisor; the teacher knows more about the classroom than the adviser; and the child knows more about himself than the teacher does. The skillful teachers are those who sense very rapidly the things a child knows.

Scriven: But there you have a common acceptance of goals. What's bothering me is that you said basic English is the language and you write out, "Child knows best." I asked for support of the slogan and you provided an example of a teacher arguing with his supervisor. Neither is a child. I want to get clear whether you are really talking basic English.

Lindsley: Here is an example of an adviser suggestion procedure: Rodney is six, emotionally disturbed, and he needs to get up his numerals. I say, "We've got a chart, now put him on M & M's." No acceleration. The adviser says, "For each chart done correctly, he gets a star." No acceleration. The teacher asks Rodney and he says, "What I want, after I finish my lesson, is for Mr. Weaver (the teacher) to talk to me." And we get acceleration.

Pribram: What you are saying is that the child knows best what his reinforcement contingencies might be, but not to choose his curriculum.

Lindsley: I'm beginning to get very suspicious of curriculum. I would like to know more about it. The charts tell me. A child with a chart like this one, a non-reinforcement type variable like the Palo Alto reader and a newspaper can pick on which one he is doing best from his chart. That's all we mean by "Child knows best."

Pribram: That's the reinforcer. That's not whether he is going to read or skip rope.

Birch: There seems to be a question here of language. All of Lindsley's examples are of teaching reading. Some people would say that he hasn't made any curricular departures. he has just altered the instructional materials.

Pribram: In our language, that's the reinforcing contingencies. The child can choose his own.

Lindsley: But it is also the stimulus array. More and more teachers and people using these charts are beginning to feel that if we have 10 or 12 children in a special education classroom we should probably have around 30 different reading-material sets and each child should be working on two or three a day.

Pribram: I have a problem in semantics. You talked about movements per minute but you don't mean movements, do you? Behaviors seem to be the right word.

Lindsley: The word should be cycles but that brings in physics much too rapidly. The term movements is a step better than responses because many of these movements were not responses. The word simply means whatever you put on the chart. One of the beautiful things about this chart is that you can pick up a very slow upward trend in acceleration with a fantastically high daily bounce. When a person is counting hostility, but calling it movement, I know that when we go from highly precise mechanical motion to feelings and so forth, I am making a major departure from John Broadus Watson and Lashley but not from Skinner. I want to build a science out of how people want themselves to behave.

We have been able to separate recording precision from measuring improvement. Say there is 50 of something happening and somedays the child counts them as one and other days as one hundred. That would put a ×100 daily bounce around the trend, which is pretty horrible recording reliability. But as long as the child's counting error is not systematic across weeks, you can draw the same acceleration and get a ×2 movements per minute per week improvement. If he increases his recording skill systematically, that is, if he becomes more aware of accurate counting as he proceeds, the only thing it will do on his chart is that recording error will decrease but still, with your eye, you can draw the acceleration.

Frequency has almost nothing to do with acceleration, and that's the difference. Number per minute does not in any way have anything to do with number per minute per week. You can have a terrible bounce in one and a high accuracy in the other. A lot of people think if you have rate you're closer to acceleration. Yes, you've got two of the things you need to make an acceleration statement but you are in no way better off predicting than in knowing the child's skin pigment, hair color, IQ, or anything. It is the same as if you know something is a mile long and a half mile wide, but without the height you cannot project the volume. We have become very relaxed on child recording. We have records of children's charts where we found that the errors were overestimations. What we actually have is an analysis of variance, daily variance partialled out for weekly systematic variance done by the eyes of the children on the chart in the classroom.

Sarason: I'm trying to separate the technology from what might be termed the basic assumptions. Could you be more explicit about the latter?

Lindsley: Most of the basic assumptions have been expressed in the recording and communication dimensions. The only thing we advise teachers about the change procedures is that the child knows best and to accentuate the positive. When you aim teachers with a phrase like accentuate the positive rather than use positive reinforcement, they come up with much more creative classroom procedures. I don't know why the two stimuli are different but they are. That's why I got into precision teaching curriculum so much.

I think it is very important that a teaching procedure have a lot of teacher decision, teacher-adviser decision, and all the way up. Part of the reward of teaching is making classroom decisions. Snelling and Snelling, the nation's number one employment counselors, recently reported in *Business Week* that of those requesting new employment, 37% requested it a lower wage but with a bigger piece of the action. They want to be able to make decisions.

Sarason: What you have done this morning is to put such emphasis on the technology that I think that what has gotten lost is what I call the constitutional issues of how a group of people are going to live together.

Lindsley: These are the things with which I have trouble. If we decide what a teacher adviser should do, we're going to have trouble. He is going to have an awful time sharing credit with the children and the teacher. They will all have a better time sharing decisions. It is so hard, if you love the classroom, not to go in there and make decisions but it is best to stay out. The beautiful thing about the chart is that we can see trouble coming very fast, usually within one week, so the danger of having decisions made by the children and the teacher is actually zero—you lose a week, that's all, and what is one week when you have 40 in the school year.

Sarason: What Lindsley has done, simplified, is to wed Carl Rogers with Skinner.

Lindsley: We are saying the same thing in different words. There is one tragic difference. Rogers tried to do his research with group research techniques when he should have used Skinner's methods and maybe Skinner should have used Roger's. Skinner is looking for general effects with the world's most sensitive, individual difference recorder, and Rogers is looking for individual differences with the most sensitive group separator. You can take almost identical groups and separate them on these beautiful analysis of variance techniques. But Rogers tried to find the drake in the flock, not whether the flock is further south.

Backman: The reinforcement seems to be mostly awareness or do you add traditional reinforcements?

Lindsley: That's completely up to them! Another good thing about the classroom decision making is that it is usually always economical. They usually get something from their environment, something that by definition, is there; you don't have to go out and buy the darn thing.

Pribram: This is an answer to the grading problem that the Presenter-Critic group was talking about last night. How do we find out where we are if we don't give grades? This is a much more sensitive way of finding out where we are.

Lindsley: Another thing that we find to be very important is to remember that we are adding this chart to everything the teacher is now doing. If a teacher says she will stop this and do the chart instead, you are running the risk that the thing she wants to stop may be one of her most successful procedures. Too, you can't stop her from doing what she is now doing anyway.

Q: What happens when you look in a school system and somebody says that this teacher is excellent, that one, rather poor—how do you know what results to expect?

Lindsley: With a poor teacher, the children's charts are very steep. Times two acceleration is fantastic, which means that every week the problem that they are working on is doubled. We may not be charting the thing we should to show the difference, like social interaction stuff, I don't know. We have 8,000 charts stored in the computer, 1200 different performances represented. The number of charts is increasing like that, the number of performances is leveling out; my estimate is that we will hit about two or three thousand total number of behaviors that are of interest to teachers in classrooms.

Oral Presentation

M. Scriven

It is difficult to do what could be called a responsible job of evaluating the suggestions in Ogden Lindsley's presentation on the basis of the available data. Clearly, we saw a dedicated and brilliant teacher, and a teacher of teachers, who provided something that, on the evidence, is extremely valuable. I think that one of the secrets of its value lies in a kind of attention to detail that the professional psychologists have tended to dismiss as trivial, public-relations-oriented, or the mere vocabulary and semantics of the game. It is to the credit of people like Pressey and Skinner that they have always kept their eyes on the pay-off in teaching when talking about their laboratory work. Lindsley is obviously following in that tradition, a tradition in which I see the future of educational psychology. I don't think that the grand theory has any place in educational psychology; I don't think that it has much place in psychology as a whole. The Pressey-Skinner-Lindsley tradition is the way to go, I think.

But there is a very serious difficulty about it that can be seen in the way that Lindsley presented his material; for one might describe his approach as that of the enthusiast rather than the scientist. Certainly, new concepts are not adopted if they are not backed by enthusiasm; the dissemination task is hopeless without it. But the other side of the coin is that the enthusiast obscures our rational evaluation of his subject insofar as he does not provide generalizing data, performance data compared with other sorts of methods. We have not been given the analytic data to enable us to determine how much of Lindsley's success is Hawthorne effect, how much is due to the use of the contract procedure, how much to specific reinforcers, and how much is due to other factors. We can readily, I think, pick up some of the enthusiasm from Lindsley and recognize a man with something that many of us and our students can use. But how much? And when?

Should we convert *most* of the curriculum in the first year of teacher training to the achievement of mastery of this technology on the basis of enthusiasm, without what I consider necessary hard facts? For example, does this technology work only with certain sorts of subject matter, however ingenious you get? What happens when one tries to use it in something like essay writing? How does it work with critical thinking, logical analysis of complex prose passages, and so forth? We don't know, at least I don't know. As critical consumers and disseminators, that is the sort of data we need, if Lindsley has it, and if he doesn't, I hope he will bear in mind that his cause is well served by persuading us of the generality of these possible extensions. For many of us, somewhat hardened by exposure to *overenthusiasm*, it is difficult to come to grips with a technique like this one unless we can get answers to a number of general background questions. Let me mention some more. Those of you who have been through the mill with hardware as I have—the programmed text, CAI*, language labs, and many other innovations-that-became-fads of our times—know very well what happens. You soon get the enthusiasts who, believing as in a new religion, run the thing for more than it is worth. A while later, you begin to hear at meetings little stories about how the McGill freshmen rebelled when they got English 2300 programmed texts; how a professor turned out a programmed text overnight by taking his old textbook and chopping it into pieces; and how a study or two from the laboratory showed that if you shuffle the sequence of frames in a programmed text you get just the same learning results as if you use the author's sequence. By the time you have been to a couple of these meetings, the in-thing is to put the particular hardware down. And so it becomes last year's fad.

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* Computer Assisted Instruction

Now the objective facts about programmed texts were damned hard to get. Still, a lot of those boys *were* a little interested in the objective facts and you got some comparative data from which you could get a balanced view that was something like this: For certain sorts of material at certain grade levels with students of certain sorts of educational background, all of which can be fairly well specified, programmed texts produce a very marked increase in performance for almost all students by comparison with, on the one hand, standard texts and, on the other hand, the situation of a teacher with big classes. Thus you got a rough picture of where programmed texts ought to be and some perspective on the crucial question, what about the difference *between* programmed texts? It turns out that the difference is enormous; the creative element in the text *is* a significant variable.

That's the situation I'd like to be in with respect to what Lindsley is doing. I feel that anything he can do to help us get the necessary perspective is going to be very helpful. One of the questions about programmed texts you could never answer from the small studies is, what happens if the kids are on programmed texts for all subjects? And what happens after they've been on them for years? Does that question apply to Lindsley's technique? What is the situation if we are monitoring their behavior in *each* class, *and* out of class, at home, in their dreams, and so on? If they are monitoring their behavior themselves *and* other people are monitoring it for them, what happens to them then? Does it become less stimulating to them? It's a real risk, as we know from analagous experiences, that they will be turned off. This question raises the spectre of a Hawthorne effect. Do we have some kind of an answer?

What sort of teachers are motivated by the possibility of using this sort of instrumentation? What are the objections to it by those who tried it and rejected if after a while? We need feedback from the dissatisfied. You often get the most enlightening information from children, as Lindsley is fond of pointing out, who find that such-and-such a procedure—a reinforcement, for example—isn't turning them on. Well, I'd like to hear about the teachers in the situation. I would like to see, of course, some overall results of student choice of curriculum versus teacher choice. Certainly, I think the emphasis on consulting the student is something that none of us would deny; student input is priceless. If we have learned something from the programmed texts and associated techniques and the CAI individualization program, it is that you are just being irresponsible if you do not get student feedback and modify your behavior in the light of it.

Let me take another tack. What Lindsley is doing is providing us with a technology. Now technology is an inadequate word for it because it underrates the extent to which it is a vocabulary as well as a technique, a skill, and an aptitude; but let me use the word as a convenient shorthand for the moment. Lindsley is providing us with a technology, much of whose virtue depends upon really careful attention to the coding questions that Karl Pribram is fond of calling to our attention. Pribram and I are both gadget-minded; in the put-down language, we are both technology-oriented, both convinced wholeheartedly that the brain depends on this sort of coding and that the less you have in the textbook and the more in the brain, the better you're going to operate; and the way to get it into the brain is to provide some sort of code that the brain can handle. You can find out what that is by trying. But, when we started raising questions to Lindsley about the "technology" he wouldn't listen. I am interested in the phenomenon of someone who says that the improvements in that particular chart and this method were, many of them, due to suggestions by teachers who used it, but when a couple of his peers start suggesting that perhaps he should use an optical characteristic typewriter to simplify his computerization enterprise, or should start expanding the ordinate scale in order to get a more obvious change, he isn't willing to listen.

All of us—Pribram and I are no exceptions to this—are mavericks in certain company. Here am I, a philosopher, doing something that many philosophers think is below their professional dignity to do. Lindsley sees himself at times as a technician doing something that the traditional psychologist considers below his dignity. But he thinks that that is so much the worse for them, and I think it is so much the worse for philosophy. So we are mavericks and ought to stick together except that, by their very nature, mavericks can't. There's the rub!

In winding up, I want to stress again the extent to which I think that this and similar techniques are what teacher-training ought to be about, not because it's all there is to teaching but because it's one of the most important *teachable* ways to improve teaching. We *must* get down to this level. Did anything really significant come out of the whole Hullian tradition of research in learning theory that tells you how, for example, to organize a sequence of lessons? Nothing. The spaced-learning stuff didn't come to anything. You cannot tell me from our years of work on learning what reinforcers will work with what children under what circumstances and you cannot give me the rule that will enable me to apply the Law of Affect, and so on. Now, most of us know that. When we look at what Lindsley has been doing, and at what some of the people with the programmed texts and the CAI people in their optimal situation have been doing, we are seeing immense positive gains in learning in almost any dimension. If we are teaching teachers, it means that we ought to be teaching them about techniques and stop talking to them about learning theories.

Now, one really important element in the psychology training that you can give them is the critical eye—the capacity to keep their head amongst enthusiasts. That's the thought I would like to leave you with as something to try to combine with the enthusiasm we all have, Lindsley included, for the sort of thing he is doing. If somehow we can get these two attitudes together, we'll have a package that I think will really get beyond the stage where five years from now someone will say, "Who was Ogden Lindsley?"

I don't want you to feel that I am discharging my obligations to the group by the few comments I have just made. I have also been trying to work up a few notes about the relation of psychological theories to practices. I think it is clear from our discussions in the last couple of days that this relation is very unlike that of physical theories to the behavior of magnets. From the physical theory you can derive deductively the behavior of these particular magnets as soon as you give the antecedent conditions. We're not operating with psychological theories that are doing that and what we are seeing is a lot of good practitioners who have something that, for want of a better word, we are calling the "theory" of their activity. What that is and what it does is obviously something quite different from a physical theory. I will get my memo* to you soon.

Discussion

Lindsley: I didn't anticipate being able to agree so wholeheartedly with my critic. As a psychologist who started out in basic science, I had to force myself to become classroom oriented, and, at first, I had a very hard job communicating with children and teachers. One of the reasons we went into education in 1965 was the work done by most of my professional peers. Of the people who did the first work in behavior modification, I would say, unfortunately, that a large minority of the Skinner-type were relatively primitive in adapting the principles to classroom work. In retrospect, many of the recording systems don't pass the dead-man test (requiring children to do something that dead men can do better). Having teachers chart minutes in arithmetic position, which is before Hull in terms of recording behavior, is straight out of 1932 Iowa Preschool recording with Florence Goodenough. It was beautiful in 1932 but it is criminal in 1970. I get a big charge out of these crazy charts on which kindergarten children produced behaviors that meet Cattell's requirements.

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* See "Training Professionals in Atheoretical Fields."

It really turns me on to think that children can produce data in raw form that means analysis of variance over a two-week period. The reason we're running this computer thing to put together all the information that comes out of the classroom is that it is the only way we know to summarize accurately across large collections of data. Do teachers that were trained in service perform better or worse than teachers who had university training in this particular technique? We've put all this in the computer.

I am conscious that I have become a well-meaning misleader when I try to describe over 300 projects without some descriptive tied-together accuracy system. The way we said it to ourselves was, although we have a beautiful chart of the behavior of one child and we are more precise than Freud was because we have a daily accountability chart, we're no better than the Freudians arguing across cases because we are just as biased. So we decided to computerize and we now have 8,000 charts we can talk about. We don't have much of a comparative print-out yet, but we have our material in a form that will permit analysis 10 years from now, tomorrow, or whenever we think we are ready to do so.

Now I want to talk as the old Harvard scientist, not as the Kansas classroom mechanic. I've been very worried that maybe in some super-subtle way we've got people expecting straight lines on charts and through some charisma, they are producing them. It could happen. It has happened with other pseudo-scientific projects in the past. So I've puzzled with that, even to saying, oh well, you can have observer reliability, that's a solution. Don't accept any teacher who is not charted by another teacher or graduate student or professor. But Tichenor went down the drain on that one. And then came the beautiful computer solution, which may not be the only one but is the one we are currently using. We are trying to do some of our own homework so that eventually, maybe in a year or two, we can provide some of the comparative data Scriven is interested in.

We got the idea of going back in the literature and taking dots off charts that were published before ours was ever even conceived, much less believed in. We transposed those published charts to ours and asked the same questions of the charts made by us as of the charts made in different forms by other people. I think the test of good science is that it change the direction and not just the number. The latter takes you from 2.3 to 2.8; the former takes you from north to south, and that is big stuff. The first thing we found in our analysis of past publications was that there were 363 published charts of human frequencies. If the author had just numbers up the left of his chart and days across the bottom, but in the narrative he had the constant amount of time, then we could do the division for him and make up the frequency. Or if he had the time down on it and the number was always the same, then we could do the arithmetic. Anything we could reclaim frequency from with any degree of accuracy we put in our computer—363 of such projects. Here is an interesting thing: Freud built his system essentially on 42 narratives that he described and memory-stored, human-mind stored. The professionals in behavior modification are building their system on 363 highly precisely recorded but human-mind-remembered projects. It follows that the gain is approximately times 10—from 40 to 400. With computer memory and high precision, we show the process with no violence.

I've asked people questions about those 363 projects extracted from the literature. In what percent do you think reward or punishment or any arranged procedure was used? My estimate was 60 to 80. The count, however, turned out to be 2:1 in favor of program procedures! The profession doesn't know what it does, not with precision. What do we do about it? I showed you four steps to success. I'm the world's reward expert; I've written up guides to arranging and arrangements without knowing anything about programming, yet two-thirds of my peers do it and two-thirds of the teachers do it. On the basis of this, I'm going to try to get a job in the Department of Elementary Curriculum so I can immerse myself with programming experts and try to learn something about the thing we do 2:1 over the thing where we are experts.

We hope to get out of the computer other statements along those lines. What we need is skillful people like Scriven challenging this system and coming up with a philosophical concept that explains it.

The hardest thing is to get teachers to teach from the children's charts. I've tried all kinds of techniques. Usually a teacher will teach for a year or two from this chart and then will say, "I didn't really start teaching from the chart until I had been using it for 6, 7, or 8 months." The analogy I use in my own head is the problems that were encountered in introducing instrument flying. When instruments were first put in, all the pilots had been excellent seat-of-the-pants fliers. And that's the way our teachers were: They used seat-of-the pants, eye-balling teaching. If you add to that an instrument, you don't always see a huge jump in the teacher. In our new teacher-training classes, two teachers swap charts and each teacher lesson-plans for the other's children on the basis of the charts. They instrument-fly each other's children and, thus, develop confidence in the chart much more rapidly. That's the same way they taught pilots to trust flight instruments. In the beginning, instrument flying was called blind flying; and that's what some of the teachers are calling this—blind teaching—even though I say it is chart teaching.

A much more severe problem is the young, fresh, dynamic, gay teacher running off the first year in school with her chart work until all the old, experienced teachers start picking on her. She goes under-ground for a while and finally gives up. If the school principal is kind and loving, he may let her teach her way for a while; but if he isn't, she may come to me in tears or she may even drop out of teaching altogether. I wouldn't engage in any kind of situation in which charts were going to be compared to any type of teaching. Charts must be added to. If you want to compare, then you compare say elementary teaching with the chart with elementary teaching without the chart and you find out what adding the instrument does. And another thing I wouldn't do, is to advocate this system if it wasn't economical. There are some so-called behavior-modification people who put two aides in every classroom and show a big gain. I can put two mothers in a classroom—they wouldn't be passing out charts or anything, just loving the children—and show a big gain, also! But it isn't changing behavior.

Long: In the cases where the children do their own charts, do they take them home and discuss their charts with their parents? If they do what happens under those circumstances? As far as the teachers and children are concerned, is there any reinforcement procedure?

Lindsley: All I can say is that all possibilities are there. Most parents cooperate with teachers. Some parents even set up charting procedures in the home to help the child change an academic behavior.

Blocher: It should be possible for us to step back a little bit and take a look at what you are doing in more general terms. It seems to me that you are creating a whole new kind of social system in the schools that involves feedback among the people most affected—pupils, teachers, and teacher-advisers. You have created a way of coding information that is acceleration and is understandable and communicable to those people, which allows them to be useful and significant to each other in ways they could not be before. This is a fairly general principle that we can look at. I don't think it is just gadgetry or technology, in that sense. It is fundamentally altering the way in which the school operates.

Lindsley: It is also putting the school psychologist in a position of being on the front line of discovery because the information is coming from the trenches, from the cutting edge of education.

Blocher: That's fundamental to this Conference—to the question of how psychology can become important to the schools. It will automatically become important if we can create systems like yours where information can be fed in understandable ways and used.

Lindsley: The only way you will do it is by making schools important to the psychologists.

Chairman: Lindsley is recording all the charts in order to get that kind of feedback for himself, which tells me that whether he recognizes it or not, there is a kind of sensitivity to feedback and its impact on his behavior, and so on. One thing I identified in Gattegno's presentations yesterday, is that he is looking for that feedback from children all the time. It seems to me that the two people who have been able to demonstrate that they have an impact on the students are the people who are looking for the information.

Blocher: It strikes me that what we have here is something pretty fundamental to the problem that brought us together.

Backman: Is it possible to chart group data?

Lindsley: The program director should have on his walls not the charts of children, for if he does, they are merely examples like ears of corn from one's best field, but charts that represent bushels per acre. Here is a school principal's chart of the rate of charting in his school. It started with less than 50% charting in the first week, after the workshop, and then it increased. After a while, he can predict by what month he will have 95% or 99% of the school charting. His goal line was four charts per student, with 1600 in the school.

Bachman: That is something different, though. It is not an aggregate of the behavior of a lot of individuals but, rather, the treatment of the group as an individual.

Chairman: I have asked Drs. Hall and Hatcher to summarize the session for us.

Hall: Instead of talking about the content of this morning, I would like, I think, to share something that I have been doing with mounting intensity these two days. I have been observing—feeling—our own group process. And I have done it with mounting success. I think at this point that is has been a plateau—recently and maybe still—of a kind of zap-counter-zap thing, in which everyone feels a need to defend his own turf, instead of trying to get to some position of integrating a variety of points of view. It is probably without quibble that there are 47 of the best minds among educators in the education world in this room. And if this is a prognostic indicant of what education can come up with when it is faced with a crisis of revolutionary dimensions, I'm not very hopeful. If intellectual integration is a goal, and in my book it is, then I think we have some work cut out for us in the next day and a half. The "heavies" that we have listened to up to now have been able to attack and counter-attack in good street-fighter fashion and I don't think they would want us to feel any anxiety about the zap-counter-zap kind of thing. So that isn't the basis of my concern. I guess I'm concerned because I am convinced that the thing that called us here together, the thing that made us all take time out at this particular time of year to come here, is a root conviction that we are in the middle of what I think of as an educational revolution that has, at this point, neither leaders nor theoreticians nor technicians of sufficient impact. And I guess what I am concerned about is, if it is true that mavericks ought to stick together but by their nature cannot, then we are, in fact, leaving the field to the conformists. Given today's situation, we have no time for that. If, for instance, we could incorporate Pribram's skills as a neurologist, Lindsley's ideas about recording and feedback, Sarason's ideas about the social complexity of the scene, Scriven's notion of bridges to basic science, and Gattegno's demonstration of the teaching process, maybe we could go someplace. But I haven't seen any indication that we are doing that yet.

Hatch: There are a couple of questions that I would like to raise. As a result of Lindsley's and Gattegno's presentations, I think that one thing one has to look at is the teacher as an actor. That goes along with the question of enthusiasm that Scriven raised before. I jotted down the phrase "decision-making" in relation to Lindsley's discussion of the child's knowing best, and I am interested in what implication it has for curriculum policy. The third question, as far as the purposes of this Conference are concerned, is how can we in the field of psychology improve the input of psychology in the schools? It disturbs me just a little bit to hear Lindsley say, "I'm getting out of this field and going into curriculum" rather than, "I'm going to back up against the wall and see what I can do to change what psychology is actually doing in the schools." Maybe there is only one way to do it, to get on the outside of the field and fight in rather than beginning in the field and fighting out.

Lindsley: That's a personal decision based on the fact that I am not very optimistic about school psychology. There are school psychologists all over the country getting into classrooms on their own—not as part of their training programs—and saying, "What am I going to do about the testing?" They're having an impact now for the first time. I used to say, "Fake it." Now I say, "Estimate what's happening." The point I am trying to make is that this is a school psychology meeting, not a curriculum meeting. When the American Society of Curriculum Development starts inviting people like Pribram and Scriven and me, I won't have to go into curriculum. School psychology is concerned about the classroom in a way that the curriculum developers are not. We talked about that earlier. All of Special Education is like one or two little rich spots where curriculum reforms are a special task. Yet you go out in the boondocks, into the classrooms, and you find aides and teachers experimenting on their own, and experimenting with success. What is their curriculum?

Scriven: I have a tremendously powerful drive to synthesize. I never leave a conference without writing a paper, even if I don't distribute it, in which I try to say what I think could be gotten synthetically out of it. The most valuable thing you can ever see in a conference is the kind of zap-counter-zap. What is important to the innovator is his salience; what he defends and should put his guts into defending is that he's got a contribution to make. And he wants to hear the counter-zap, even when it is somebody saying, "No. Actually that is nothing new." If he is scientifically honest, he's got to meet that challenge. I think that this is the raw material out of which the consumer—which is you—makes the decision of what to buy. Even if we don't get a synthesis out of this Conference and you go to a further set of conferences where you deliberately aim for it, which is part of the overall plan, it would not be a disaster. I don't want you to feel that even if you see some hostility kicking around amongst the participants of a conference, that it is not terribly important to learn from and that it is antithetical to creating a synthesis.

Education: An Enterprise In Language Learning

Karl H. Pribram

Let me begin by introducing myself in order to put my qualifications and biases before you. My concern with the educational process has three roots: I am a father of five children; I am a professor in a great university; and my chosen profession is to do research on the brain-behavior frontier. These roots have nourished a concern that appears to be shared by all at this Conference. The time is ripe for a hard look at what we are doing to our children.

My immediate experience is with higher education: college, doctoral programs in psychology, medical school, and residency training in the medical specialties. I have found, as has been found so often in more formal analyses, that the ordinary approach to teaching turns enthusiasm into ennui and curiosity into conformity. I have the suspicion that attrition of this sort can also be found in grade and high schools.

My views on what can be done about education (Pribram, 1964) come from my research. To oversimplify somewhat, the brain turns out to be primarily an instrument for coding information. Properly coded, information can be stored in retrievable fashion and retrieval does not come hard. Proper coding is what education is all about, or ought to be.

By information I mean novelty, the factual content of what we teach. The trick is to transmit information from one generation to the next in such a fashion that the information remains useful to the individual and to society. Usefulness need not necessarily mean practical use, though contribution to social and cultural progress is one major result of good education. The usefulness of an education may equally well, however, take the form of esthetic enjoyment and ethical efficacy.

The coding of information is accomplished by the time-honored process of repetition. It is the form repetition takes that makes the difference between a good and a poor educational system. That we intuitively acknowledge this fact is shown by our arguments and efforts in choosing the best curriculum. That these arguments and efforts are often in vain shows that we have no criteria for judging what might be best.

The results of brain research suggest a way to establish such criteria. Let me emphasize once again that the brain is primarily an instrument for coding information (Pribram, 1969). The brain quickly becomes habituated to any simply repeated sensory event. Habituation, however, is not a fatiguing of nerve cells leading to a raised threshold for excitation. On the contrary, habituation is the organization of a neural representation of the repetitiously experienced sensory event. Here is the classic experiment by which Eugene Sokolov (1960) at the University of Moscow demonstrated this fundamental fact.

Repeat a tone beep of a given intensity and duration. A subject exposed to the beeps will initially show physiological and behavioral indicators of orienting (GSR, heart and respiratory rate changes, EEG activation, cocking and turning of head, ears, and eyes). These orienting responses fade within three to five repetitions indicating that the subject has habituated. Sokolov's ingenuity lay in showing that orienting could be reestablished (dishabituation) by any change in the stimulus configuration—even by making it *less* loud or shorter. When shorter than expected, the orienting reaction takes place at the offset of the stimulus, therefore, during a period of unexpected silence.

The point is, that simple repetitions set up a representation in the brain that allows an organism to distinguish between the familiar and the novel. Ergo, information to be usefully processed must be simply repeated at least a few times in order that the pupil's brain can construct a representation of it.

But simple repetition will lead only to an ability to distinguish between the familiar and the novel. In order for information to be meaningful to the student, he must be able to do something with it. Training in the operations that make information meaningful again entails repetition but now the repetition must be organized. Organized repetitions of information constitutes coding or programming. Coding enriches; it gives meaning to what otherwise would be barren fact.

Three examples help illustrate the importance and power of coding. Take the stripped plot of most novels. This plot can be communicated very briefly and recognized as familiar if met again. But such communication would hold little interest and convey no meaning. The skill of the novelist consists of enriching the plot, weaving together several plots, evoking participation in his readers, and so forth. The skill in enacting a representation of the plot is a skill in coding; and when properly performed it becomes memorable.

A second example is the arabic numerical system. The concept zero and the concept of using its placement to provide a simple decimal code were inventions in coding that made mathematical communication infinitely more powerful and memorable. Can you imagine the operation of the U.S. Treasury if fiscal policy had to be implemented in the Roman numerical code? Try to work your own budget next month adding LXX to XIV!

The third example comes from my own experience with small, general purpose computers. In order to initiate function, one must load into the computer memory 20 or so instructions that, together, are called the bootstrap program. These instructions must be toggled in by way of 12 switches on the front panel of the computer. Each switch can be in either an up or down position; thus the 20 instructions necessitate that 240 switch positions be toggled: U D U U U D U D D D U U, etc. The procedure gets to be pretty confusing, especially when any mistake, even of the eleventh position of the eighteenth instruction, means that the whole bootstrap must be repeated from scratch. Computer programmers quickly found a way out of the problem by dividing the switch array into triplets and assigning an arabic numeral to each combination of positions of three switches. Thus D D D = 0; D D U = 1; D U D = 2; U D D = 4; D U U = 3; U U D = 5, etc. Eight numerals (including zero) do the job and a combination of any four numerals describes an instruction (e.g., 4370). Our laboratory personnel very quickly mastered the ability not only to load the bootstrap without error but to remember most of the 20 instructions without having to refer to the printed program. The same information was transmitted in either form but the change in code from an up-down (binary) system to an eight-numeral (octal) system clearly increased the power and memorability of the communication.

This fantastic gain in power and memorability that comes from innovations in coding must be explicitly recognized by today's educational process. In essence, a classical education (the three R's) consisted of just this sort of training. The complexly programmed codes we call languages are the currency of powerful and memorable human communication. What has happened, recently, is that we have multiplied the number of generally-employed languages. In my father's time, one's parochial language plus the universal tongues of Latin, Greek, and mathematics were sufficient to communicate most of a man's and his neighbor's social and cultural heritage. Today, the various languages of physics, chemistry, biology, and psychology are easily as relevant to ready communication as are the classical languages used to pursue literary and political enterprises.

My suggestion is, therefore, that we return to the basic aims of classical education but that we enlarge the kit of communicative tools with which we equip the student. By returning to the aim of classical education I mean just that: We teach the language of chemistry, the language of ecology, the language of the human body so that our students can communicate about these topics. We are not in these early years attempting to make competent chemists or biologists any more than the classical educationist was trying to turn his pupils into mathematicians or authors. Languages are not just words, however, nor are they only systems of codes or programs by which individuals can communicate with each other. Languages are also systems of codes by which internal communication—thought—becomes facilitated.

The results of brain-behavior research also tell us something about the way to go about educating the coding capacities, the linguistic abilities, of our pupils. The brain representation of sensory events is largely private. In order to communicate, this representation must be enacted, must be externalized in action. A two-step educational process is therefore necessary: (a) instructing, that is, structuring into the pupil a representation of the aims to be achieved, and (b) allowing the pupil opportunity for enactment so that the instruction becomes meaningful to him.

It is in the opportunities for enactment that the classical model of classroom education falls short. In the cultural framework in which classical learning took place, enactment was assumed to occur outside the school. Foreign languages were used in one's travels; mathematics in one's currency exchanges; and one, at least, became a spectator in the Roman Forum to participate in history, and in the theater to participate in literature. But how much better would it be were English courses infused with drama so that a laboratory exercise in enacting Shakespeare would accompany reading as literature! In the sciences, such laboratory enactments have become standard practice; why not in the humanities? But instruction in the sciences often falls short in the opposite direction because it fails to recognize that the first job is to teach the language, to portray the richness of the fields of inquiry, not to make a scientist of the pupil.

Herewith is a summary of the import of these results of brain research in terms of the four topics assigned to the conference.

1. *Socialization.* According to the research results described, two needs exist: (a) to establish an Image toward which the student can strive, and (b) for guided freedom to develop codes to enact his own version of that Image. Images need not be formed within the schoolroom; they can be established by visits to enterprises that are seizingly beautiful or enthusiastically pursued. Audio-visual displays (the TV program, Sesame Street, is, of course, a pioneer) provide excellent adjuncts. But most important, students must be made to feel by his community that some goals, some enterprises and encounters are worth pursuing, that the reward of pursuit is greater awareness, self-fulfillment, and social integration.

The guided freedom to develop personal skills to enact Images in the student's own fashion can only be accomplished in the flexible environment of a non-graded school system and all that it entails in changes in the student's school environment. Here, teacher-supervised computer-assisted instruction can make its mark. The price of computers and their peripherals has plummeted to such an extent that there remains little excuse for not giving each pupil access to a console for at least a few hours a day. In the not-so-distant future, such consoles will be available at home and the drudgery of homework will be a thing of the past. The reason why computer-controlled instruction is so much more interesting than working through ordinary assignments, is the immediate feedback, the communication between console and pupil. It is not the equivalent of a private tutor but it is a step in this direction.

2. *Curriculum Development.* The research results described suggest that curricula be developed around the concept that each subject-matter constitutes a language-system. Thus an overview of the advantages of knowing a particular language must first be provided. It's good to know math because ——; it's good to study geography because —— etc. Then the elementary vocabulary of the language must be mastered. And finally the grammar of that language, its rules of organization that make it a coherent body of knowledge.

3. *Teaching.* We once asked medical students at Yale what they wanted most from their professors. The opinion expressed was almost unanimous: Show us the excitement, bring us the enthusiasm that make us want to learn, the rest we can manage from the library. At the grade-school level (and again later, e.g., during medical residency or postdoctoral training) this attitude is not enough. The teacher must also be able to guide the students' explorations and attempts to build coding skills. He can do this by example, by well-chosen and *well-timed* demonstrations of how it can be done, by gauging the amount and character of the repetition required by an individual pupil, and so forth. The teacher's own style of encoding will certainly be emulated and so he must be at least somewhat aware of how he goes about communicating.

4. *Guidance.* As indicated by the research results described, a great deal has recently been learned about the process of communication. I have focused on communication by languages whose content conveys the accumulated cultural heritage of man. There is another set of languages, however, those used in conveying interpersonal transactions. There is a body language, a language used in the games people play, and in the overt (e.g., legal) and hidden contracts that bind social intercourse. Knowledge about these languages and about the personality structures that are conveyed by them ought to be common knowledge. My friend and colleague George Miller, in his presidential address to the American Psychological Association, suggested that we "give psychology away to the people." There is no better place to do this than in grade and high schools and not only to pupils but to teachers and parents as well. Because this enterprise is new, a beginning might best be made in PTA meetings and student curricula developed within these meetings. As it now stands, PTA, in my experience at least, has been an almost empty and superficial exercise in

politeness, acquaintanceship, and cooky exchange. Why not make PTA the medium for enhancing public awareness of what psychology has to offer and for engaging in real encounters? And why not teach the psychology of social transactions to the teenagers who are most avid to find out just what is happening in their social lives? Again, let us teach this subject matter in terms of the fascinating languages that man has developed, not in terms of prescriptions for how life ought to be lived or material that must be memorized. Let the student encode in his own fashion the enactments that he pursues with the languages he has mastered.

I believe that we can do better by our children than we have. It is a new world they encounter, a world of social proximity, affluence, negative income tax, and other new dimensions. Since mid-century, an incredibly sumptuous harvest of knowledge has been gathered in the brain and the behavioral sciences that is relevant to this new world. In the ordinary course of events, it would take another quarter of a century for this knowledge to become effective, that is, institutionalized. In today's rapidly-paced, changing social climate, we cannot wait. The challenge before us is, Can we in this conference formulate a program with teeth in it that will hasten the institutionalization of psychological knowledge within the educational establishment? If we don't, our students will turn elsewhere. The Free Universities, muddled as they may seem to be, are forerunners of what can be accomplished once word gets around. The time to act is now. What can *we* do?

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Education: An Enterprise in Motivation

Donald H. Blocher

I read Dr. Pribram's paper with a great deal of interest and appreciation. It is almost impossible for me to quarrel with most of his basic theses about the purposes and processes of education and I would quite agree, for instance, that a great deal of the educational enterprise involves helping individuals learn the coding systems that are characteristic of our various academic disciplines, and that curriculum-makers must view the communication of coding patterns, or languages, as a primary problem in the presentation of subject matter. Such coding systems become the tools with which we learn how to learn. My only reservation is that, perhaps, quite generally, in psychology as in other disciplines, we need also to address ourselves to the problem of developing simpler and less esoteric coding systems to enhance rather than' retard communication among disciplines and between the academic and general communities. Dr. Pribram's paper is an excellent start in this direction.

It is when we come to the operational problem of engaging the learner in that series of repetitions that seems essential to establishing the coding patterns or language forms that practical problems always arise in teaching, however, A coding system exists to manipulate and communicate information about some phenomenon or other aspect of human experience. As does any kind of representation, the coding system simplifies or abstracts from that experience. Many of the coding systems that we now employ attempt to convey information about very complex and abstract phenomena or experience.

As Dr. Pribram implies, much of the art of the teacher or curriculum-maker involves designing and communicating a coding system or language that can be learned in some reasonable number of repetitions, yet which will adequately convey the richness and complexity that is inherent in the phenomenon described.

The kind of understanding and skill involved in teaching and curriculum construction, even viewed in this way, seems to me to imply a very significant level of understanding of the learner as well as of the subject matter and its particular language form. Very often, in schools, we attempt to communicate complex language forms requiring numbers of repetitions that learners are simply not prepared to make in order to achieve habituation. Certainly teacher attractiveness and enthusiasm are factors in engaging learners in such repetitive activities, but I am not well satisfied that these elements exist in most schools in sufficient measure to change the conditions of boredom and disenchantment to which Dr. Pribram alludes.

As educational psychologists, teachers, and curriculum-makers, I believe that we will have to turn much more of our attention to the backgrounds of learners in order to understand the levels of complexity, abstraction, intensity, and ambiguity that are found in a given learning situation and that govern the tendency of the child to approach, partake, and habituate or withdraw, avoid, and fail within it. Essentially, what I am talking about is human motivation.

We have often failed to understand the psychological aspects of learning environments, particularly in regard to their opportunity structure, because of our naive notions about human motivation. In the past, we have tended to view motivation as a more or less fixed quantity that resides within an individual, rather than as a learned response to a given stimulus situation. In more recent concepts (Butler & Rice, 1962; Hunt, 1960; White, 1959), motivation has been viewed as a more complex construct. Such more recent views tend to focus on the level of stimulation existing within a given environment and to assess level of motivation in terms of the approach-withdrawal behavior of the individual. The human organism is seen as seeking stimulation and as requiring at least minimal levels of stimulation for normal development. The concept of stimulus hunger adds a new dimension to human needs. Heisler (1961) pointed out, however, that when levels of stimulation become too high, the organism tends to retreat or withdraw to situations with which it can cope more comfortably. The level of stimulation with which a child, for example, can engage and cope adequately is a function of his past learning experiences. An overprotected child or one from a stimulus-deprived background may withdraw from levels of stimulation in a classroom that challenge and intrigue another. Still a third child with a very rich stimulus diet may be bored and seek to raise the stimulus level in the same classroom.

Unfortunately, we know all too little about the nature of stimulus conditions that produce stress in one child and evoke wonder and excitement in another. However, at least four elements in stimulus situations are known to be related to their effects on approach-withdrawal behavior or motivation. The most obvious of the four is intensity: The hot stove, the loud noise, and the electric shock are obviously aversive stimuli in many situations. Even here, however, wide individual differences in reaction to stimulus intensity exist, as witness the success of rock and roll bands, psychedelic displays, or even such hobbies as parachute jumping. Many individuals are motivated to seek very high levels of stimulus intensity and even to use drugs or other chemical means to increase the intensity of experience.

Another obvious stimulus element is novelty. New stimulus elements tend to have higher values in raising levels of stimulation than do more familiar ones. Children and adults tend to seek increased stimulation through novel experiences, but when intensity and novelty are both high they may withdraw from the situation and experience stress reactions.

A third element that raises the level of stimulation in a situation is complexity. Games, puzzles, works of art, literature, and music all vary in complexity and attract or repel given audiences as a consequence. A fourth element that operates similarly to complexity is ambiguity. Considerable social-psychological research has demonstrated the existence of differences in tolerance for ambiguity and the consequent resistance to such ambiguity-reducing defenses as oversimplification or premature closure.

As we study the behavior of an individual student then, we need to assess the levels of stress and stimulation that exist for him in the learning environment as a function of the match or mismatch that exists among his previously learned capacities to cope with elements such as intensity, novelty, complexity, and ambiguity. Often, considerable learning must occur before a given individual is able to utilize the opportunity structure represented by the curriculum, community, or even peer culture.

If the school exists to facilitate human development, it is vitally important that it be organized around sound concepts of the nature of human motivation. Most people recognize the tension-reducing aspects of motivation. They know that children need food, water, clothing, and shelter and move to organize the society to provide for these needs. Increasingly, professional workers, such as educators, are recognizing children's needs to be protected from excessive anxieties and fears. We are recognizing the avoidant behavior of disturbed and insecure children who withdraw into themselves or otherwise defend against the disintegrating effects of fear and anxiety.

The last area of understanding of human needs and motivations to be assimilated into the operation of educational systems, however, is that that concerns the developmental needs described in the paragraph above. The needs to achieve, to explore, to manipulate, and to master are just as real as are the tension-reduction needs of a growing child. They are the underlying basis for the actualization of human potential and, unlike other needs, if they are not nurtured early in the child's life they may be extinguished forever because they are so fragile.

Many teachers find exploratory behavior in children to be threatening or at least annoying and they systematically punish children for it because it conflicts with their needs to control and manipulate. Such adults often see children, in fact, as objects to be manipulated, and they see exploratory behavior as an effrontery by which the children are trying to manipulate back. It is extremely important that the guidance systems, especially in elementary and junior-high schools, be able to feed in sound information about children's developmental drives to teachers and to parents.

Today, especially, our schools are attempting to work with a large population of so-called culturally different youngsters, some of whom have, in effect, suffered from relatively long periods of acute stimulus malnutrition. Their motivational systems have simply not been nourished normally because of this deprivation. In many cases, deprived environments under sub-human housing conditions, parental abuse or neglect, and lack of toys and other cultural materials have not provided the motivational bases to maintain achievement and master behaviors at a high level. The tragic experiences of many such children in our schools is only too well known. Thousands of them become progressively more inadequate and alienated from the activities of the school. They cope with such inadequacy by either withdrawal or aggression until they are finally pushed out of the system physically or psychologically.

This tragedy often occurs, partially at least, because the school functions around a set of extremely primitive myths about human motivation. Much popular thinking about human motivation is, in fact, not only uninformed but downright irrational. For example, the very frequently used concept of an unselfish motivation is, of course, an absolute psychological paradox. All motivations, as we have seen, are based on inner needs that are by their very definition selfish, that is, part of the inner person. The paradox arises because people are not able to discriminate between the behavior of an individual and the inner need or motivation that actuated the behavior. Behavior is judged by its effect, not by the intention prompting the behavior.

Because people are unable to make such discriminations, they constantly tend to attach moral connotations to motivations, that is, many parents and teachers tend to think of motivations as good or bad. In fact, of course, motivations are inner needs that are not in themselves good or bad but are simply there. They are activators of purposeful behavior but do not themselves determine the form of the behavior. The nature of the actuated behavior is largely a function of the individual's past learning and present opportunities. Such behavior may well be subject to moral judgement in terms of its social consequences. The underlying motivation for the behavior, however, is not moral or immoral. One of the most important understandings that teachers need regarding human behavior is that "good" and "bad" behaviors very often have quite similar motivations.

Another recurrent myth about motivation is that human beings are at times unmotivated, which is rather obvious nonsense. The only completely unmotivated person is a dead one; to live is to be motivated. In fact, when people are basically engaged in doing things of which we approve and pursuing goals that we recognize, we say that they are motivated. When they do not engage in behavior that we happen to view as desirable, we tend to describe them as unmotivated.

From this standpoint, it is obvious that no child—in fact, no one—is unmotivated. Such an explanation for the failure to obtain desired behavior from a child is an empty rationalization. The function of an educational system is, rather, to attach desirable behaviors to the existing need at a given time and helping the child to meet that need by engaging in a pattern of behavior that is developmentally and educationally desirable.

In these terms, educators do not motivate children. Most tries at motivating others are empty attempts at preaching to or exhorting people and have very shallow and temporary effects. Instead, we must be sensitive to a child's level of need or motivation to enable us to shape new patterns of behavior in him. Some kinds of needs or drives are easily satisfied and are at relatively low levels most of the time. Developmental drives, those that involve the need for mastery, exploration, and manipulation, seem to increase with stimulation as long as that stimulation is not too far above the chronic level.

Thus, developmental drives are the most powerful actuators of most kinds of educationally desirable behaviors in human beings. Attaching skills and languages to developmental drives means giving the child the feeling of control, mastery, and discovery. It means setting up open-ended learning experiences in which the shapes of behaviors are determined by results directly observed, rather than by fiats given by the teacher. It means placing both the responsibility for and the satisfaction in learning on the learner.

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Oral Presentation

K. H. Pribram

As a means of integrating the earlier sessions a little bit, I have organized my comments according to the speakers who have preceded me.

Dr. Gattegno's comment, "In the beginning there was the word," I have perceived in my own fashion as a neurosurgeon. In the beginning, is the word and, as has been pointed out so clearly here, children's proclivity in developing language is really fantastic between the ages of two and three (and even earlier in some girls). We should take advantage of that proclivity.

The particular horse I wish to ride today is that all of our early educational efforts ought to be directed toward building communicative ability through language. The ride has its pitfalls, however. The word is a representation of something else, of something that we can point to or that we can do. All such representations, however, are not words. In order to be a word, according to the linguists, the word must be part of a sentence. Let us call communicative signals that are not part of sentences signs and symbols.

Human beings are not the only organisms that can make signs and symbols. Two chimpanzees now use signs and symbols to communicate, one at the University of Nevada and the other at the University of California at Santa Barbara. Some of you have probably heard of the first, Washoe, a chimpanzee trained by the Gardners, who can do 150 to 200 signs from the American Sign Language; she communicates quite well even though she does not string the signs together in anything that looks like a sentence. The other one, David Premack's chimpanzee Sarah, uses tokens—symbols—and is able to string them together so that she goes through a whole hierarchy before she receives the reward.

Communication of this sort is not, therefore, peculiar to human beings. Communication by sentences, however, appears to be. Communication, of whatever sort, can be conceived of as the processing of information, where information is defined as novelty. There is more to *processing* information than just communicative novelty, and that is what my paper is all about: Novelty is not sufficient; novelty must be repeated in order to become meaningful communication. Repetition is technically referred to as redundancy. Meaning is derived from the form taken by redundancy.

Dr. Gattegno mentioned that children begin to talk on their own. They have a tremendous productive capacity for making language although opportunity for communication is necessary for language development. Actually, there is a danger to communication in this proclivity for making languages. The use of disparate languages gets in the way of communication. In her summary this morning, Dr. Hall pointed out that the Presenters and Critics at this Conference seemed to be more interested in defending their views (languages) rather than integrating them. The same thing happens at other meetings. I had to summarize a conference of psychologists in Prague a year ago last summer, and so I attended the meetings of the various groups (mathematical psychologists, verbal-learning people, linguistic psychologists, and so on). I found myself saying, "All these people are talking about the same thing but in their own ways." They had developed highly specialized technical languages. They thought, therefore, they were talking about different problems, yet they were not. Our proclivity toward making languages has become a danger to communication. It is something that we have to guard against in our meetings here and elsewhere and probably in our schools. Once human language has been produced the relation between a word and what it represents—its meaning—is no longer straightforward and simple. Educators need to take this into account explicitly.

The second point I want to make is that the reason I kept questioning Kohlberg yesterday is that I thought, when I wrote my paper, that I was supporting the classical, traditional stance in education—the teaching of languages. To begin with, this means a return to the three R's, mathematics being a language. By contrast, he mentioned mental health: We must assure that children grow up healthy with rosy cheeks and psychological solidity—the progressive-education position. The third position, the transactional approach, was Kohlberg's and he correctly traced it back to Dewey. After hearing him I have become converted to the transactional position and find it more palatable than the classical or traditional because of just this danger that linguistic systems tend to become autonomous and thus to block rather than facilitate communication.

In my paper I discussed this stance under the heading of socialization. I can build up for myself all kinds of fantastic representations of what has been going on in this Conference or anywhere else. I can Image all and I have complete privacy in doing so. Some of the things I privately Image may prevent me from becoming bored under some circumstances but they are not necessarily what ought to be communicated. They are my internal representations, the coding systems that I build out of what's out yonder and I can have fun with them, but they are not necessarily ready for communication.

In order for communication to take place, I have to make these representations external. The cheapest way to do so is to talk. As we have this tremendous facility for language, I can tell about my internal reveries as a human being. The trouble is that then you get back to this business of the privacy of the language you use. I can talk about things in my own terminology providing I have a small group with whom I can especially interact. We can talk about DRL's and FI's and VI's and two or three of us will understand. It will make us feel good because then we are the in-group, the inner circle. But it is still private communication.

When we make external representations we must be wary of how we do it, especially to how large a group we are talking. One of the things we have to do in education, I think, is to try to get some kind of external representations that are universal or, at least, more or less universal, so that what we teach in one school in Alabama, for example, is sufficiently communicable to somebody teaching in Ohio. The task is not easy. In my paper, I mentioned some of the things that I think can be done. In order to teach children to communicate we must have representation through enactment, that is, the representation must somehow be gotten out of the self. But in order to do it properly for the children we teach, we must give them practice. We must allow them to enact their representations and then give them corrective feedback. Either we say, "I don't know what you are talking about," or we have another child say, "We don't know what you're talking about; the enactment is on you." Somehow, through enactment, we have to get the language out in communication.

The crux of all this is something that we found out recently about how the brain works. In order for two organisms to communicate, they have to go through a very strange kind of process that is just the opposite of what all of us were taught the brain is like. I think most of us have the idea that the brain is a sort of computer, or a telephone exchange, where somebody makes an input by pushing buttons on the computer or calling up the brain—addressing it, in other words—and the computer or exchange goes through some switching mechanisms to connect up this and that and then there is an output back into the environment that can in turn be picked up by another brain. But the brain doesn't work that way. First of all, everything that comes into the brain is processed through a filter—the word is not quite appropriate—rather, an active mechanism programs the signals occurring in the input systems. By the time the signals arrive in the parts of the brain that are coordinate with consciousness they have been altered, changed, broken in, and made ready for the individual to accept. Nothing comes into the brain exactly the way it presumably is out there. In fact, we have to reconstruct the "out there" from a myriad of signals that come to mean equivalent messages. It is important to realize that in communicating, the other organism is bringing to his input as much as you are bringing to yours. To tell this to teachers may be like bringing coals to Newcastle—we all know it but often ignore it. Yet that is just the way the brain works and it won't work any other way.

Even more startling, perhaps is the converse: All of behavior is enacted not by pushing buttons in the brain, as you would push the keys on a piano to hit the right strings, but through biasing mechanisms on receptors that work much like thermostats. When you want to change the temperature in a room, you don't turn each radiator on or off; what you do is fix a set point on the thermostat and then, depending on the environmental contingencies, the furnace turns on and shuts itself off at the appropriate temperature according to the thermostat. Muscles are controlled in the same way. There is on each muscle something like a little thermostat, or homeostat, or gadget, and all you do is change the set point on it. This is very important in terms of our coding mechanism and what we need in the way of memory storage. In order to control behavior the way the brain does it, you don't have to store all the turnings on and turnings off of the furnace (muscles), all you store is the set point and everything else takes care of itself. One way of getting efficiency in coding is just in this way—storing set points. I was interested to see Lindsley this morning use an analysis of behavior that aims toward set points.

Set points are ways of storing information—coding. If we teach set points rather than details of how to reach those set points, and we let the child take care of how he gets there, we are programming behavior in a way that comes right out of brain physiology. When we start playing the piano, the brain doesn't say, "All right, now contract this little biceps over here, relax those triceps, lift the little finger, push it down. . . ." No. The brain just plays the piano. All that is stored is essentially a whole program as an end point of what the hands should do. If the piano happens to move a little bit, the program adjusts for the movement quite automatically without stopping.

These facts are why I questioned Lindsley's use of the word movement as synonymous with behavior. Entirely different movements can lead to the same behavior. The word "act" is a better synonym for behavior; both Skinner and Tolman used it and it is common in the humanities: an act, a performance of some sort. I use "act" and distinguish it from "movement," which physiologists reserve for patterned muscle contraction. An "act" is the consequence of movements that enact in the environment what is stored in the brain.

It doesn't matter what word you use, however, as long as it is very clear and you don't use it for what somebody calls something else. That's not always easy, of course. The word field is a good example: Field is grass, a physical force, a psychological study, a baseball diamond. As long as the speaker specifies the context, you are clear on what he means.

Let me be very specific now and try to give an example of the problem of using different languages and how each language is fairly distinctive and has a lot to offer to the people who use it. When we get into a general conference like this or in the classroom, it is worthwhile being able to translate from one language to another. Now translation has so many fine points that it is never perfect. It is an approximation and, as I continue to talk to you, a transmission of information, but only up to a point. For instance, it can be argued that the word reinforcement has technical connotations that go beyond the equivalent or overlap meanings that I might want to impose. But many investigators think of reinforcers as essentially providing information to organisms when they are learning something. They are the cues that tell an animal whether to go right or left, and so forth. When, in the technical sense, the animal has already learned, however, he is learning nothing new from the use of a reinforcer because he is just repeating the same thing. It still can change his behavior. Take a male rat and put him in a maze with one white and one black alley and install a female rat at the end of the white alley. It takes the male one try to find out that the female is in the white alley and he never goes into the black anymore. Up to then the reinforcement provided by the female is informative. But from then on running speed depends on how favorable she is to him and how many intromissions he gets with her. There is a linear relationship between the number of intromissions and how fast he goes. In that case, a mathematician or social psychologist would say that the reinforcer acts not as information but by placing a value on the performance of running. It values, it biases the performance; it changes the setting on the behavior.

So a reinforcer can provide information during the learning process and be valuative during performance. Furthermore, a reinforcer has many faces. A reinforcer is a reinforcer only in the context of previous reinforcers. Reinforcement is always a sequence, a sequence of events that fits into a certain context. In fact, we talk about programming or scheduling reinforcers.

Thus when one uses the word "reinforcement," one can be talking about bridges or about the arrival of troops, but to a psychologist the word means something very special. Each language system has grown independently of the others and has an entirely different data base (context) from any of the others. In the classroom I would talk all the languages and simply say, "Here's the way people who work with these materials and problems talk."

In biology we have committees on nomenclature. For instance, every 10 years the Association of Anatomists reviews the names of muscles and nerves and decides what each will be called by everybody. In my research I used to go around the country and say, "Here's a part of the brain that has no real name. So-and-so is calling it the "lateral X"; somebody else is calling it the "posterior X"; I call it the "inferior X." Let's settle on one name and use it." We got agreement after a while.

All of this discussion has brought me back to the theme of my paper, which is that the brain is a mechanism ideally suited to making codes. Of course the brain stores some information but the trick is to find out how the brain retrieves the information it is storing. I believe I have found that if coded properly, relevant information just pops right out when the situation, the context, demands; thus storage and retrieval processes are very closely related and basic to both in this business of coding.

Yesterday afternoon, I remarked with respect to Dr. Backman's paper, that we all use our brains all the time unless we are asleep—and even then—to maximum capacity, in the sense that the neurons are clicking away and the brain waves are undulating. Intelligence is a skill, as Backman mentioned, just as thinking is a skill. One of the things that I think language does is to allow us to communicate with ourselves through thoughts. Thinking depends on the arrangement, the program, the code operative in the brain and often results in a more efficient program taking up *less* of the brain's capacity.

So in summary, what my paper says is first build into the child a variety of languages. What I have learned from you up to this point in the Conference is that in addition to teaching children to produce their own languages—their own codes—and to enact "their own thing," we must teach them then to be able to identify and communicate commonalities among what they and other people are doing.

I now think that this is what the educational process could be all about. If we identify education as being language-teaching in this broad sense, I think we could get around an awful lot of problems of what should be taught. For instance, a biologist can go into the second grade and say, "Boy, look what I've found!" The child does not have to become a biologist. A physicist can come in and say, "Look at those stars up there!" and he can talk about them. So I conceive of education as language learning at an elementary level, but not just the language of our tongues. It is language learning by *working* in laboratories, *doing* things in the community, and so on, and finding out what a language really stands for. Understanding, not proficiency, however, would be the aim.

Oral Presentation

D. H. Blocher

As I understand Dr. Pribram's presentation, he sees many of the problems of teaching as being concerned with imparting or translating coding systems or languages within which learners are able to store and retrieve information. Teachers receive in their classrooms a youngster who is equipped by his previous learning experiences with a given set of coding systems or languages. The teacher attempts to help the child extend, enlarge, or develop cognitive structures that will enable him to collate and relate new information and retrieve the information in useful ways.

In practice, it seems to me, the teacher is often confronted with wide gaps between the existing coding systems that the child brings to the classroom and the systems that the teacher uses to communicate her subject-matter information in a relevant and coherent way In that condition, very often, children disengage from the learning situation and withdraw attention and cooperation.

Often this kind of problem occurs when the gap between the teacher's and the child's existing set of cognitive structures is very great. In that situation, the set of stimuli with which the child is confronted is perceived as extremely novel, complex, ambiguous, or even intense and threatening. His reaction may be an avoidant response in which he disengages from the situation.

The approach-withdrawal behavior of the child in this situation is typically tied in the teacher's mind with the construct of motivation. Avoidance or withdrawal by the child causes the teacher to label him "unmotivated." This label gets the teacher off the hook. She is able to evade responsibility and say in effect, "That child is unmotivated; he can't be taught; the hell with him." This kind of static construct of motivation ensures the same kinds of self-fulfilling prophecies that have been perpetuated in the past by static models of intelligence. In that case the paradigm went: This child has a low IQ; he is stupid; he can't be taught; I have no responsibility.

We are gradually replacing static models of intelligence with developmental models that construe intellectual functioning as a set of operations that grow and develop and respond to nurturance. It is important that teachers come to see motivation in the same way. Levels of motivation in children that enable youngsters to engage actively new cognitive structures or coding systems that extend beyond, but not too far beyond their existing structures in terms of complexity, novelty, ambiguity, and intensity, are nurturable and such nurture is very much within the province of teacher responsibility.

Indeed, much of the art of teaching involves building bridges between existing cognitive structures in children and the richer coding systems that will launch them on the way to what Gardner Murphy calls "progressive mastery of a discipline or area." Creating constructive mismatches between where the child now is and where he can go developmentally is very much the process of education.

Discussion

Gattegno: I think there is an art in listening that makes us allow the speaker to be himself. I consider that my job. That is why there is not only the job for the teacher but also the job for the learner—the student—and you have to know the job of the learner in listening.

Pribram: How do you get that across to your pupils?

Gattegno: By stating that it exists. This premise is not the one that most people start with.

Pribram: That's something I learned from my father and try to transmit to my students. My father was a physician and biologist. When I took my first biology course at the University of Chicago, it permitted me my first real interaction with him and I was very pleased. But I didn't, at the outset, understand a word of what he was talking about. He said, "Just wait; by the end of the year you will." That threw the burden of listening on me.

Dr. Gattegno makes it very clear to his students that he does not expect them to be him or even to understand all that he is doing on the first day of a class. They just have to be there and he lets them know he enjoys their being there. I teach college freshmen and sophomores and I have to answer their questions of what I want them to get out of the course. Actually, I tell them, I am more interested in their getting whatever they want out of it because I have only one sort of goal. That is, 10 years from now, when the students read a *New York Times'* article that has anything to do with brain function, if they are interested and can understand it, they will have gotten everything out of the course that I want them to have.

Chairman: If I understand you correctly, understanding is a result of being in the teacher's presence and of learning the language of the subject matter from him. Dr. Gattegno has said that one of the most interesting things in life is that we don't teach children the language; we just live in their presence, they just live in ours, and they learn the language. If I understand the position correctly, it is 180° from Dr. Blocher who said that what you have to do is to change your language to be near the child's. Do I have the positions correctly?

Blocher: As I saw Gattegno, he changes his language to reach the children.

Chairman: It sounded so to me but the inference could be quite different.

Pribram: I think there is a little of both, depending on the age and development of the child. Obviously, I cannot talk to a 2-year-old as I do to a 20-year-old. Blocher made a point in his critique—pay attention to the child and where he is at—that I would like to respond to. There is a technical vocabulary to every field and one of the jobs confronting you in teaching anyone about that field is to give him the rudiments of the vocabulary. If I want to teach algebra, I cannot do it exclusively in terms of numbers; at some point I have to resort to symbols that stand for numbers. If, on the other hand, a technical vocabulary is not necessary, then you adjust to the child and use the ordinary language he understands.

Sarason: You aren't saying what Gattegno said when he walked into the Harlem classroom and the children were not at that moment ready to take what he had to give them so he started playing "catch-my-thumb" —that you have to adapt to where the student is and that may be quite far from even the rudiments of the language that you feel they ought to have ultimately?

Pribram: It may be paradoxical but I feel that you have to do that and, at the same time, keep hold of your end of the teaching situation.

Chairman: I think there is a third position: When you provide the language you also provide the translation.

Gattegno: I have studied many languages and I know how difficult translation is. It is not just a matter of going from one language to the other. Language contains so much that one has to marvel that communication is possible. At the same time, if you look at a language closely, you will find that it has developed in a way to allow the expression of many experiences. Language is vague by construction to allow more people to use it. It becomes precise only when you know what you want to say in such a way that your expressions are adequate to your system of sensitivities. So language functions first for expression, that's where one can work on it, and second for communication, which is a miracle when it happens.

Blocher: I am interested in your statement of language being for expression and the miracle of communication because I think it facilitates the learning of children. When you come through that way in a classroom situation, it seems to me that you reduce the fear that the child has brought to a new learning situation—of failing, being ridiculed or embarrassed. With your approach, you reduce in a child that kind of set and you help him engage himself in the learning process. Many teachers won't do that.

Gattegno: Why are you concerned with the child's fears of being shamed and ridiculed? It never occurs to me.

Blocher: Because I have seen so many children consistently shamed and ridiculed and embarrassed a thousand hours a year for 10 or 12 years in the schools that we have.

Chairman: There is a difference between growing up in a clinic where you see the results of that kind of fear and in the classroom where it can be overlooked.

Gattegno: I have a clinic of my own and I see the people come in and leave six days later when they have no need for me.

Chairman: In the clinic, do they talk to you about their experiences in the classroom?

Gattegno: No, no. I leave all that out because the problem is that they have formed images of themselves that are distorted. I give them a chance to know themselves as capable people, to meet themselves as functioning systems that know what they are doing, and then to respect their own senses of truth.

Wilk: I find myself thinking that what Pribram is proposing is a way to think about the cognitive life of an individual and that Blocher is saying that there is an affective dimension to learning behavior, as well. I am trying to integrate these two ways of thinking about action.

Chairman: Don't forget Gattegno's notion that there is a somatic part of the individual that must be taken into account also. I don't know where it fits into the other two.

Wilk: I don't know either. It seemed to me that Blocher was trying to express in his motivational language what Gattegno was saying and Gattegno wasn't buying it.

I heard Blocher trying to make an adjustment or translation between affect and motivation and Pribram's cognitive approach. Can they bring their positions together a little more? Where are the linkages between the cognitive and affective domains?

Pribram: The way I have conceptualized affect comes back to what I think the brain is doing. We store programs in our brains and then try to enact them. Each program is a language. Computer scientists call one form of program a programming language, another form of program, another language. They say the same things essentially. So you've got different languages saying almost the same thing but different brains, different computers, and the result is different programming languages.

What happens with affect and motivation is this: Anytime you can't enact a program into the outside world, to use the expressive phase of the language (which does not have to be verbal)—anytime the program has been triggered to run itself off and it is blocked in some way, all kinds of neurological things (stop mechanisms) are called into play and cause what we call affect. So what the organism then has to do is use internal brain mechanisms—for which I have a good deal of evidence—to readjust the program. That's the affective reaction.

Q.: But there is more than one kind of affect.

Pribram: Certainly. Let me provide an example. You can be in love or you can love someone. If you are in love with someone, he/she is programming you. Usually, you are passive about it; you are being programmed and your programs are sometimes blocked during these very passive moments. That's when you are in love. When you love somebody, your two programs mesh and you are going ahead full steam, faster than you would ordinarily, and your programs are not only enacted by you but by the other person. That is loving as opposed to being in love. The same thing is true of listening to music and making music. One is emotional and the other is motivational. The emotion is the internal coping with programs.

Sarason: Let me preface my question by saying that I think you are very lucky, Dr. Pribram, in that you are struggling with the problem of how do you bring together two parts of your life: the brain scientist and the teacher. I have been listening to you from the standpoint of what is your theory of teaching. I have evolved a set of ideas about it but I want to hear what you have to say. What is your theory of teaching?

Pribram: I guess that first I set up an image of what I am all about. I say, "Look, I'm going to teach you something about the brain today; it's important and some of the most exciting experiments have just been completed. I'm going to show it to all of you before I get through, and in whatever words I can. You don't have to understand fully what I'm talking about." All I have to get through to them is the word brain and my enthusiasm for its importance. If I get those three images across, then I'm in.

That's the first thing I do, set up an image. And then I work with the students until they begin to be able to program on their own and to communicate their programs. I then inquire to see whether we have some kind of match. I do this by way of long answer tests and term papers. Often, I read these and say to myself and later to the student, "This is great! I didn't know all this!" or "It matches what I think!" and off we go. Note that the emphasis is not on facts although facts are necessary for communication.

In the meanwhile, it doesn't matter too much what goes on in the lecture hall except that there must be enactment by both the teacher and the student. *Both* must develop their own programs to meet the current communicative demand. And that's my theory of teaching.

Blocher: What do you do when you don't get enactment?

Pribram: First I wait, then I talk and give support, and then I try all kinds of odd things. In addition to teaching freshmen and sophomores, I run a postdoctoral program— a training program—of neurochemists, neurophysiologists, behavioral psychologists, anthropologists, psychiatrists—the most odd assortment of people you have ever seen in what was supposed to be a united program. To get communication going, we held conferences. Initially, when a chemist would get up and talk about the brain and some of its chemical properties, an anthropologist would be snoring away in a corner. When the anthropologist would talk about chimpanzee life in Africa, the chemist would say, "That smells; that's not science," and he would walk off somewhere. What could I do? I held supper parties for the group. For a year and a half we all ate and drank together, and now small interdisciplinary groups are beginning to form. We talk together and there is even some communication among the small groups.

Sarason: What I see is that Karl Pribram says to his students, "I have something to give you and I don't expect that all of you are going to like it."

In a sense, he states the rules that he thinks they should be governed by and that will govern him as well. He also tells them who he is. For example, it is not fortuitous that he told us about Chicago, California, Prague, his father, and his five children. How many times does a teacher in a classroom say something to the children about who she is?

My point is, if we are going to prepare teachers and psychologists, we have to be clear about our conception of what is a teacher.

Scriven: We don't want to talk about our conception of what is a teacher. We should be talking about our conceptions of the various models of what a good teacher is for various clientele.

Young: I would like to ask Dr. Pribram about an area of which I have read and heard a little. Some research results appear to show that changes in behavior, attention, memory, and learning ability can result from chemical interventions. What can you tell us about these interventions?

Pribram: Let me go around your question just a little and then come to the point. Do you all know about phantom limbs? When a leg has been shot off, tingly, cramping, twisting feelings occur in the limb that is no longer there. Thus, the place that the feeling is going on is not out there where your foot used to be, but up here in the brain. It is the same as when one sits on a tack; it is actually felt in the brain. Much experimental work has been done to indicate that for some reason or another, we don't seem to be directly aware of our brain or its activity as such. One can become aware of brain states with some training, however. When I perceive your face, I am actually responding to what is going on in my cortex because if I cut out the cortex you will disappear.*

The brain is thus an organ through which we can experience subjective states and influence behavior. In almost every psychiatry department today, groups of biochemists are working on the problem of mood and states of mind—depression, elation, sleep, wakefulness—and even aggression and submission. These states appear to be chemically determined by a group of chemicals called the brain amines. The question is, do we want to go into the production of changing people's moods chemically when we once know how? We are not quite there yet. My own personal feeling about drugs is that we use them in emergencies or when they are warranted by disease processes. When a patient can't handle his own blood sugar in the normal way, then he is given insulin every day in order to stay alive. But I would not want to take insulin just to make myself feel hungry enough to go down to dinner!

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* See K. H. Pribram. *Languages of the brain.* N.Y.: Prentice-Hall, 1971.

It is quite clear from experiments carried on at Berkeley that practise makes the brain grow bigger just as exercise makes a muscle grow bigger. The brain actually grows in size; the brain cortex thickens due to the fact that the cells grow bigger and branches grow. Also, the glial supportive cells—not nerve cells—increase in number. Thus brain stimulation is good but it doesn't need to be chemical or electrical—the classroom will suffice. In a way, that's what teachers are for: to exercise their brains and those of their pupils and, under ordinary circumstances, it seems to me to be a good way to do it.

There may be times when it may be warranted to give drugs to increase temporarily the capability for storing or utilizing information, but they are extraordinary. Suppose there is a war on and it is necessary to train a lot of people to handle a foreign language. I see no reason why they could not be given a drug during the course to speed up the learning process. Ordinarily, I don't think speed is worth that much. In other words, if a child can learn something in six months, I do not think that anything can be gained by intervening chemically so that he will learn it in six weeks. We would just have to babysit him for the remaining four and one-half months.

Young: Have any insights been gained regarding the use of chemicals to prevent the deterioration of brain cells and so prolong the productive life of a person?

Pribram: Your apparently simple question requires a rather complex answer. At a UNESCO meeting in Paris, two years ago, Lord Adrian was in charge of a big session on aging. He was about 92 years old, at the time, and he was busily taking notes on all the horrible things purported to happen during aging. So I turned to him and said, "You know, some recent findings on the brain disconfirm all of this."

As he knew, and as most of us know, brain cells stop dividing shortly after birth. This is one of the problems that has always plagued brain scientists about memory storage. If neurons don't divide—scrape off a piece of skin and it grows back; scrape a bunch of neurons off and there are no replacements—how can you keep learning? Some of my colleagues took a cyclotron to layers of the cortex, removed them very carefully, and used beta rays to destroy locally some brain tissue. What they found, much to their surprise, is that they got a lot of new growth of fibers going into those regions where the space was formed.

"So now," I said to Lord Adrian, "while you are sitting here losing brain cells at the rate given by the speaker, just think of the room being made for new fibers to grow. It's new connections that count and it is they that make it possible for you to be intellectually alive and so interested in taking notes."

So now everytime I feel that I'm getting a little rigid, I hit my head and get rid of a few brain cells to make room for new growths of fibers. That's where our knowledge is at this moment.

Another point. What one is going to be like at 70, 80, or 90 is sometimes determined when one is about 40. If one has learned how to rejuvenate one's programs early in life so that they keep changing, if one can learn new "languages," in my terms, when you are 40, by the time one is 60 or 70 one is so used to reprogramming one doesn't need drugs to do it.

Young: What about the experiments that have been done in the transfer of knowledge from one organism to another?

Pribram: These experiments are controversial. Sometimes transfer has occurred; but when the same or other people have tried to replicate the work, they were often unsuccessful, but not always. My own hunch, and this is only a hunch, is that these experiments should not be written off completely. Transfer occurs often enough so that I have a feeling that there is some real fire behind all this smoke. What that fire is may be the same thing that happens when a child takes benzedrine, for instance, which facilitates, boosts learning; different experimental tasks can even be facilitated differentially. However, this explanation does not cover all the data. In one experiment some rats were habituated to sound and other rats to visual stimuli. Then their brains were removed, ground up, and injected into mice. Those mice that were injected with the light-habituated brain learned a light-mediated problem in far less time than could be expected; those that were injected with sound-habituated brain showed more rapid learning of a sound-mediated problem. We just have to suspend judgment on these results until we know more.

Bennett: In certain kinds of brain damage, retraining seems to be very effective in some instances but not in others. The question always is, "Is it a matter of the kind of destruction that has occurred or of the kind of teaching that determines whether a person can be retrained when, say, half his brain has been shot away or, as we see more commonly in schools, he has post-encephalitis with massive and diffuse damage?

Pribram: There are two problems. If the damage is too great, either the patient will die or become a "vegetable." But there are all kinds of stages between that condition and functioning as a viable, social human being. It depends on the extent and locus of the damage. The second problem is that usually we don't have the proper diagnostic techniques. Just as, in the ordinary classroom, each child has his particular constitutional propensity for processing information and programming, so each damaged child has a different range of abilities, depending on the locus of the damage, the constitutional makeup of the individual, and his prior programming. The first step is to get a good diagnostic repertory to find out, especially in the more subtle cases, what capacities are impaired. The second is to replace that capacity by an educational prosthesis. I am asking for the replacement of a piece of brain tissue by an educational procedure.

A little earlier, I mentioned that nerve fibers in the brain fill in the spaces left by destroyed brain cells. I have a beautiful film that I show my classes in which you can actually see the growth of fibers in tissue culture. A nerve cell is like an elongated amoeba with tentacles at the end. They feel their way; if they come up against an obstacle, they go around it; often they get discouraged for a while only to try again. The brain is a very live organ. In addition to this potential for growth there is the fact that fairly extensive damage can occur to parts of the brain without impairing its ability to respond to highly organized patterned aspects of its environment. The research and possible reasons why this should be so are reviewed in the paper I prepared for the conference on The Future of the Brain Sciences* and in my book *Languages of the Brain*.

Long: How would you translate the concept of will or volition in your brain language?

Pribram: During our coffee break I put up this Tote diagram (Fig. 1). The original diagram was made 12 years ago and contained a testing phase and an operational phase. As noted, the way I program teaching is to set up tests or Images and let enactment—the "operate" phase—be taken care of by the pupil. But the earlier diagram left out a process that has in the last 10 years been identified as the feedforward process.

Let me illustrate feedforward with one of Helmholtz's experiments. If you push your eyeball around with your finger you see the world as jumping. If you move your eyes voluntarily the world remains still. That means that there must be a signal sent to the place in the brain wherever I am perceiving the world that I am about to move my eyes at the same time that I move them. It is a feedforward process rather than a feedback because it occurs before the movement takes place. Whereas today's computers work on a sequential basis, the brain with its feedforward operates by way of parallel processing—feedforward—as well as sequential—feedback—mechanisms. It is the feedforward that accounts for voluntary behavior, for intentionality, by providing a bias, a setting that influences, values, the rest of the mechanism.

Long: I would like to refer back to the Kohlberg discussion, yesterday morning. You were pressing him about his aims of education. What are yours?

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* K. H. Pribram. The physiology of remembering. In *The future of the brain sciences*. N.Y.: Plenum Press, 1969.

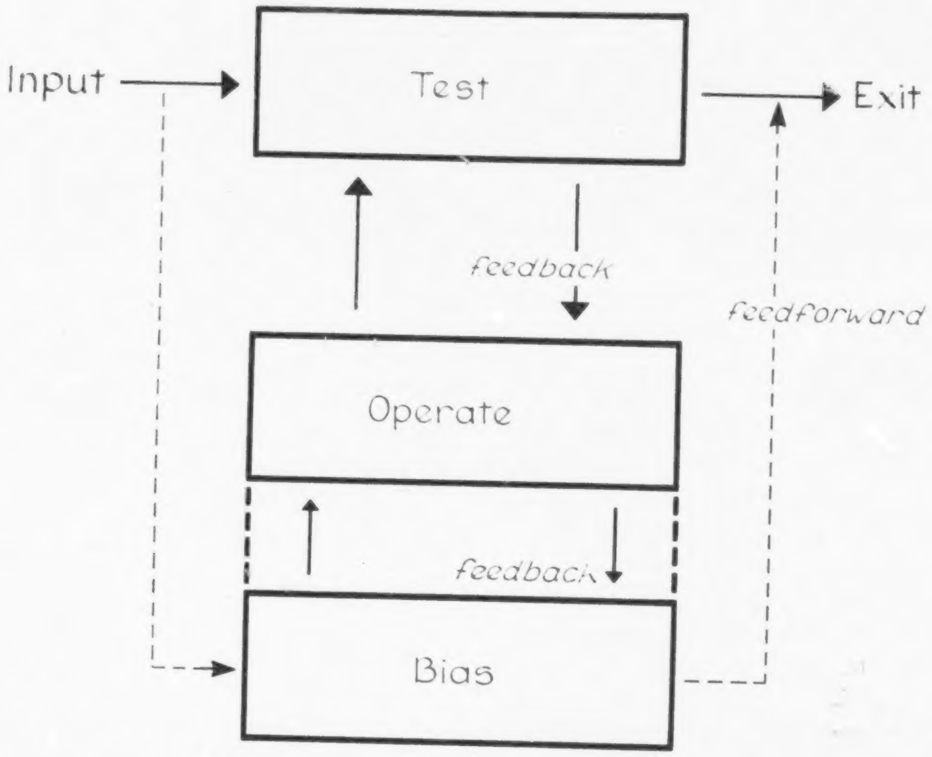

Fig. 1. Tote diagram (K. H. Pribram).

Pribram: The reason I emphasize languages is that I think that what we ought to teach teachers is the language of languages. There has been a lot of talk—in psychology at least—about information overload. I don't think such a thing exists. Anybody can handle as much information, practically, as is thrown at him. When overload is present, it is in the context of the language system, in the way we program the information. Suppose we have a second-grade teacher who has to teach five or six different subjects, none of which seems to be related to each other. Then a student walks in; every hour he is exposed to a different subject matter, none of which seems related. In that situation, the abilities of both the teacher and the student begin to be overloaded.

I am suggesting that we treat all subject matters as languages. Languages have structures, vocabularies, rules, and ways in which they are used as expressive mechanisms. We want to communicate by means of them; therefore there are problems of how to communicate. If we teach teachers the language of languages, then we can show them some commonalities in their work; a unified way of looking at what they are about. It is what they are doing anyway, so why not make it explicit? We don't make biologists in second or third grade, or geographers; we try to tell pupils about the world. So why not say to the teacher, "Here is the language of geography, the language of the earth sciences, here is its vocaulary and here is its peculiar grammar, such as reading a map."

All teaching experiments could therefore be viewed as experiments in learning languages. And why should anyone learn a language? Because it is so much fun, because it enriches the individual, passes on the culture to him, and allows him, in turn, to communicate the culture to others. These reasons are why we have children go to school in the first place. A child should learn to read—not because he *should* —but because then he can read books and talk about them which means that a whole new world opens up to him.

Young: If the goals of education—what we are going to teach—should be what the children are going to be involved in in the future, what is your projection of the social trend?

Pribram: Remember in my paper that I suggested the formation of subcultures? Nobody wants to be all by himself. One of the things about classical education was that it made you feel like a participant in a cultural elite. I think that we have to create cultural elites that are neither uniform nor monolithic—subcultures to make an individual want to learn to communicate in another system.

Smith: A decision to create subcultures may very well be creating something that will cramp the development of the child. Kohlberg said that he would look for universals in development and that he would define education in those terms. His view is opposite to the idea of having some adults look at little children and deciding to allocate some to this subset and some to another and so on. That would keep the children from developing communication systems. I have great difficulty conceptualizing how you would make decisions to allocate different children to very specialized and limited languages.

Pribram: I would not allocate. I would lead and interact with the children. Ask the child. If he's tone deaf, he is not going to do very well in, say, music. If he's clumsy, mechanics may not be for him just yet. But this unmechanical child may be interested in music and the tone deaf child in mechanics. The important thing is that opportunity exists for the child to model himself—and want to—on some ongoing elite that makes all the work involved worthwhile.

Gattegno: I would like to ask a question of the group. How many of you share Dr. Pribram's concept of education—teaching languages and forming subcultures? Nobody.

Hall: I think Pribram means language as a system of coding, a manner of communicating. In his sense, education is a process of moving between thinking and communication. I found some very interesting parallels in terms of very specific kinds of problems that I face in working with teachers. For instance, it's hard for teachers to understand that children think independently of any language, education, or schooling process, and that problem-solving processes go on regardless of the child's particular form of coding or language expression. The next point that made sense to me, in terms of the way that I look at the goals of education, had to do with the frequent interpretation in our schools of different children's languages as a basis of the categorical classifying that we all descry. Until we begin to think of education as coding in a kind of super-particular language, then, we aren't getting at that.

Chairman: Dr. Pribram's notion about teaching languages caused me to think about the problem of the rapidity of change in the society we live in now. How can we set a curriculum in the schools that is relevant to where the world will be 12 years from now when the children get out of school? His idea of teaching them access to that world rather than the world as it is now or will be is a very intriguing one to me. How would the idea be realized? Suppose George Young, for example, who has been confronted with it and likes the idea, wants to incorporate it in the St. Paul system. How does he go about deciding what the schools are going to teach?

Pribram: I am saying, look at whatever you are teaching as a language. Instead of trying to teach the children all the facts of a subject, teach them the language of the subject; let them find out what the words mean.

Birch: But how does that decision get into practice?

Pribram: There are two ways: One is to go to the grassroots and convince enough teachers, which is what Lindsley is in essence doing, and which I have done, too; the other is to set up an elite that will motivate others to follow. We would be much better off if we could set up around five elite groups in different parts of the country and say, "Look. We're going to start looking at the educational process as language teaching in this broad sense of the word language."

Sarason: The problem is that it doesn't work and it hasn't worked. Rather than the world having changed so quickly, a very good argument could be put up that, in fact, it hasn't changed and it isn't changing all that quickly. I am more impressed that the more things change, the more they remain the same. The new math is a splendid example. We got the Christian Diors of academia to come up with the new math; then we did a study and found that it is being taught exactly like the old math. The same thing has been true of the new physics and the new biology. The classroom of today is the classroom of 10, 20, and 40 years ago. The curricula have changed, the thing inside the hard covers has changed, but the rules of behavior—the constitution of the classroom—are the same today as they were 40 years ago. We don't have anything resembling a conception of how you change a complicated social organization. It is not a matter of getting a bunch of elite people to show the way. That idea is not adequate. It has never worked.

Pribram: My paper and presentation have both focused on the aims of education rather than on practices in the schools. I would like to see a restructuring of the grading system and many other things, but I was not addressing myself to such questions. With regard to practice, my suggestion is that we set up elite kernel systems. They seem to be working in India with respect to birth control. Little groups of advocates fit into communities where they offer some rewards to the residents for following the new way of doing things. They are seed communities.

Sarason: I am talking about life in the modal classroom. As I started to say, we have had Ogden Lindsleys before, but 98 percent of all classrooms are no different today than they were.

Blocher: If the teachers begin to ask the child and to negotiate contracts with him, won't that change the kind of thing they are doing?

Sarason: Yes. But the question is, how do you get to that point?

Gattegno: There is only one hope in education, to find something that is really acceptable to everybody—conservative or liberal, poor or rich, or whatever culture—something that can be defined as the element that can improve education. And I have found only one thing, the education of awareness. We go into schools as they are and make only one change: the perspective and the attitude of the teacher. Because teachers change, there is no objection when the principal changes the orientation of the school. And because the school is proving that it is getting much better results than last year or the year before, the community accepts it. When they find that it costs less than before, they want to generalize it.

There is no magic. If I am an actor and you are less of an actor, you will perhaps take 10 percent longer than I did. But what I know, which I pass on to others, is what is at work in the classroom. I know that I develop the faculty of awareness.

Blocher: Gattegno and Lindsley have both captured this group in a way that nobody else did and they did it without papers. Both got up with things to do. They demonstrated and they captured us.

Hall: That was the coding system. That was the teaching process.

Hatch: One of the crucial issues, in terms of the things that Lindsley is talking about, is that it is really nothing new. Yet look how long it has taken for the whole idea of acceleration of behavior through reinforcement and so forth to filter down from the field of psychology into the educational system!

Lindsley: Scriven said that perhaps, for a while, the idea of using theory as it has been used in physics, will have to be set aside. We don't have the facts yet, the experiences in the classroom to which we can begin to hitch the theories. Physics went on for years, building and making wheels; and the wheels came before the theory. The only thing that I got from Skinner was frequency. But I also got that from the audiogram, electro-physiology, the radio, and Carl Backman.

Blocher: Both Lindsley and Gattegno have ideas and we have seen the ideas demonstrated. But you don't market these things at the level of papers or ideas. You market them at the level of "I can come into a school or work with a group of teachers and do what these fellows did."

Young: If Sarason's observation was incorrect, it was incorrect in that since 10 years ago, there are worse things going on in many classrooms. And it can be judged as worse because we know more now than we did then about what we ought to do. The point is, we are not doing it. As a school administrator, it is my view that the demonstrations don't bring about changes either. The problem is, how do you go about the dynamics of actually bringing about change?

Sarason: What Young has just said deserves discussion because his question involves the whole strategy for change.

Chairman: And that is the subject of the next session when Dr. Sarason will focus on change in the classroom.

Again: The Preparation of Teachers and The Problem of Change

Seymour B. Sarason

The Problem of Limited Resources

My initial concern in this paper is with a problem I touched upon very briefly in a recent book, *The Culture of the School and the Problem of Change* (1971). The problem was put as follows in that book:

> Fantasy is a double-edged sword in that it solves problems and gives expression to wishes at the same time that it denies external reality. One of the most frequent fantasies in which teachers indulge—and it is by no means restricted to teachers—is how enjoyable life in a classroom could be if class size were discernibly decreased. Like the heavens of religions, reduced class size is a teacher's ultimate reward in comparison to which inadequate salaries pale in significance. The reason I label this a fantasy is not only because it is incapable of fulfillment but because those who hold it tend to be unaware that it is unrealistic. Let us put it this way: if Congress in its infinite wisdom were to pass legislation making it financially possible to reduce class size in half, the legislation could not be implemented. It is conceivable that over a period of a decade the necessary physical plant could be built —our society has rarely failed in crash programs of a technological nature. What would be impossible would be to train teachers and other educational specialists in the numbers necessary to implement the legislation. Our centers of training simply cannot train discernibly more people than they are now doing. In fact, our centers of training are quite aware that they are not now doing the quality job that is required in terms of selection of students and quality level of faculty. These centers cannot, nor will they, discernibly increase the numbers being trained. In short, the goal of dramatically reducing class size is far from a financial problem (Sarason, 1971).

In this paper, I aim to examine some of the consequences of the recognition and acceptance of the fact that we are and always will be dealing with limited resources. Needless to say, those who cannot accept what I consider to be a fact will not find my comments and suggestions interesting or cogent. These individuals will continue to believe that by an act of national will or resolve, accompanied of course by appropriately-sized expenditures, our colleges and universities can train discernibly more personnel (teachers, reading and speech specialists, psychologists, social workers, psychiatrists, etc.) then they are now doing. It is, to me at least, surprising and disconcerting that those who hold the view that no justifiable bars to *quantitative expansion* really exist, assume at the same time that *qualitative* *improvement* of present and future personnel can also be accomplished.

It is important that we try to understand why this belief in unlimited resources is so easily accepted by so many people in and out of the field of education. I cannot do justice to the question here because I believe that much of the answer involves no less than American cultural history and ideology. I wish only to suggest that it is part of our ideological heritage to believe that no problem in our society cannot be solved by technological inventions, technological efficiency, legislation, money, or some combination of all of these. Just as some believe (or believed until very recently) that we have vast and unlimited physical resources, so others view our human resources in much the same way. Another aspect of this ideology is the belief that we can solve a problem quickly if only we can agree that it exists and needs to be solved. Declare war on poverty and poverty will be eliminated! Declare segregation illegal and it will soon cease to exist! State as national policy that reading is the foremost educational problem, appropriate millions of dollars, and in the next decade reading as a problem will be virtually nonexistent! We have indeed been an optimistic society founded on the belief that strength of motivation and will can overcome *any* problem, and relatively soon. Our convictions have carried us far and, for certain existing and future problems, they will carry us farther. However, I would rather, if I were forced to make the choice, live with the mistakes of an optimistic society than with those of a pessimistic one.

Because the idea of limited resources is so central to this paper, I would like to illustrate the point by some recent history in fields that have increasingly become allied with education.

During World War II, planning began for the development of mental-health services for returning veterans who would need them. Never before had the govenment been faced with the planning of personal services on such a vast scale. All kinds of hospitals and clinics would have to be built. Mental-health professionals would have to be trained in very large numbers and, in order to do so, the government would have to underwrite financially the relevant university departments.

Several guiding assumptions were basic to the planning: First, psychotherapeutic techniques of various sorts were the most effective means for dealing with the problems of individuals; psychotherapy, so to speak, was the mental aspirin to be dispensed en masse. Second, the chief dispenser of the mental aspirin was the psychiatrist; the clinical psychologist and social worker were to perform primarily other related functions peculiar to their traditions and training. Third, mental-health professionals could be trained in numbers sufficient to make a discernible and effective dent in the size of the problem. (I should emphasize that all of this planning was only in relation to the veteran population which, although staggering enough, was insignificant in comparison to the demand that could be anticipated in the general population.) So we had the situation of national resolve and billions of dollars to do justice to the veterans.

As important as what did happen is that it was quite predictable that personnel could not be trained in numbers sufficient to meet the objectives. Even early on, when it became quite clear that viewing psychotherapy solely in the medical domain was an inexcusable indulgence of professional preciousness and clinical psychologists and psychiatric social workers were thrown into the breach, the disparity between defined need and available service was in no way lessened—particularly as the demand for mental-health services in the non-veteran population mushroomed. Other branches of the government got into the well-heeled act in order to insure that the mental aspirin could become generally available. Crash programs to train psychotherapists sprang up almost monthly. But the programs began to crash in unexpected ways, in part hastened in the late fifties by the reports of the Joint Commission on Mental Health and particularly by the work of George Albee. As he then and since has pointed out (among other things), our resources were far too limited to do the job in the ways the problem was conceived. Disillusionment set in in both the government and the field. Disillusionment turned into chagrin and guilt when events in the larger society made it quite clear that blacks and poor people were not getting and could not purchase the aspirin. (It was no balm to the blacks and the poor to be told that purchasing a therapists's time was by no means easy even if one were rich and white.)

Then began, and we are now in, the era of community mental health. Although this new direction is in part (but only in part) a dawning awareness of the limitation of professional resources, the problem has not yet been faced squarely. My experience with community mental-health centers forces me to predict that they will fail to meet stated objectives, partly because the limitation of resources has not and will not be confronted. Confronting the problem is extraordinarily difficult because it forces one—or should force one—to examine the values underlying professional training, its content and duration, and alternative conceptions to existing roles. Mental-health professionals spend so much of their training and careers thinking about how to change other people—and let us not forget that they judge their work by how well *others* are changed—that their difficulty in thinking about how *they* might change becomes psychologically and sociologically understandable.

An Alternative Approach to Teacher Training

Faced with the limitation of resources, one is forced to think in ways to improve the quality of existing programs. The trap here is that improvement frequently ends up in the prolongation of the training period, with the self-defeating result that the problem of resources becomes even more serious. Still another trap is that improvement results in adding new courses or experiences to programs, and the effect is that the quality of everything in the programs is diluted. If only for heuristic purposes one's thinking must be bounded by two rules: The length of the program must not be increased and, if one adds something new, then something old must go. I should warn the reader that when I have asked small groups of educators to be guided in their thinking by these two rules they did not find it at all easy, primarily because giving up something old was like giving up a part of themselves, which in a way it was, and that is where the problem begins. The way things are is the way things *should* be and how can you do away with a "should"? My point is that accepting these rules for the purposes of thinking—not acting—is difficult because it requires our challenging conceptions and making choices.

In my own approach to the problem I have been guided by my experience with new teachers in urban school systems; I have listened to and noted their observations on and criticisms of their preparatory training. Briefly, here is what they have said:

1. A good deal of their professional training ill-prepared them for the realities of the classroom. This criticism covered psychology courses, almost all of which they regarded as interesting but not helpful to them as teachers.

2. The teachers of teachers, as a group, are viewed as no longer being in touch with the realities of the classroom or the larger school culture, and therefore the contents of courses or supervision were far from helpful. The criticism is of three kinds: First, some teachers of teachers have been away from the classroom for so long that they do not comprehend how things have changed. Second, some of the teachers of teachers do not seem motivated at all in going back to the classroom. Third, they ill-prepared their students for the complexity of the "discipline problem," and nothing is more overwhelming and disorganizing to the new teacher than not understanding and managing the discipline problem.

3. The nature of life in a school—the formal and informal social and intellectual relationships with other teachers, the principal, supervisors, and special personnel—was for all practical purposes ignored in their training. For example, as I have said in my recent book as well as in an earlier one (Sara-

son, Levine, Goldenberg, Cherlin, & Bennett, 1966), the loneliness of teachers is not something for which they are prepared. Put more generally, the training of teachers does not focus on what I have described and called the culture of the school and school systems. As a result, the new teacher has little or no basis for anticipating, understanding, and coping with the conflicts that characterize the school culture.

Nothing in these criticisms is new (e.g., Sarason, Davidson, & Blatt, 1962). I am aware that the federal government has initiated and supported programs to improve the effectiveness of the teacher of teachers but, for reasons discussed in my book (Sarason, 1971) on the school culture and the problem of change, I cannot be optimistic about the outcome. It seems to me that the improvement of teacher training must be obtained, however, and I suggest that it can be if the teachers of teachers would work along the lines of my proposal, which is as follows:

> Anyone who enters college with the thought that he will or may become a teacher will spend one full year in a school system, and this year must come before he takes any kind of a professional course. This year, preferably the first or second, will receive full academic credit, that is, it will be counted as one of the four college years. It is obviously impossible here to spell out in detail how the year will or could be spent but it is possible and necessary to state what the student should observe and experience.
>
> 1. The student should experience and participate in enough classrooms so that he can see how in the same school or school systems there exists quite a range of classroom atmospheres reflecting very different conceptions of children, learning, organization, discipline, etc. As I have emphasized in my book (1971), school personnel generally are not as aware as they should be that, in fact, a school system tolerates (I am not saying encourages) a wide range of practices, attitudes, and atmospheres. For example, the student should see that a classroom can be viewed, and is viewed, very differently by different teachers. They should interact with teachers who maintain that authoritarian discipline is essential if chaos is to be avoided, as well as with teachers of the same grade whose classrooms are not chaotic and where discipline is not authoritarian. They should have experience with teachers who take a very dim view of lesson plans, as well as with teachers who maintain that lesson plans should only be disregarded under duress.
> 2. A fair portion of the year should be spent working closely with a variety of administrative personnel: principals, district

> supervisors, subject-matter supervisors, pupil-personnel director, the superintendent, etc. The aim of the experiences would be to provide the student with some basis for observing and understanding how the different administrators perceive and relate to schools and their problems.
>
> 3. The student would attend on a regular basis a variety of meetings at which problems are discussed and plans and decisions are made, such as board of education meetings, administrative council meetings, faculty meetings, department meetings, case discussions, etc.

I do not want to get bogged down in the details of the year if only because I am aware of the different ways in which the experience can be organized and, at this point, of the undetermined limits to what can be accomplished in a school year. The point to be stressed is that the major aim of the year is meaningfully to expose the student to the culture of the school; and such an exposure requires experience beyond what can be provided in a single classroom or school, which is the usual case with practice teaching.

Several consequences can result from my proposal. The first is that it will give the prospective teacher a far more comprehensive and realistic conception of the culture of the school than can now be gained by any program. Second, it will provide a firmer basis for the individual's vocational choice, that is, whether or not he/she should go into teaching. Third, it will provide a breadth and depth of personal experience that will enable the student to be a far more active learner or participant in whatever professional courses he may take when he returns to the college classroom. Put more bluntly, the student will have some basis for determining the degree to which what he is told by the teacher of teachers makes sense in terms of the realities of the school culture as he experienced them. Fourth, precisely because he will know that the returning student has spent an intensive and differentiated year in the school, the teacher of teachers has the opportunity to give more of what he knows in a shorter period of time than is now possible in existing programs. Just as any meaningful attempt to improve the public schools requires changing in some way what I have elsewhere called the existing behavioral or programmatic regularities in the classroom, so the proposal presented here is intended to change these regularities *in the college classroom*.

The final aspect of my proposal is concerned with the content of the teacher-training program.

> When the student returns to campus he should be required to take no more than two one-semester technique-materials courses; he should be able to elect whatever subject-matter courses he chooses; and he should be required to have a practice teaching experience of one semester's duration. Since the year he will have spent in the schools will have involved him with teachers and

> teaching, it may be that six months of practice teaching is too long to reach the point of being able to manage a classroom independently. Certainly there will be students who will not need six months to reach this criterion of competence.

This proposal has encountered some major objections. The first is that the proposal would result in a watered-down college education in which the liberal arts and sciences would, as in earlier decades, go by the board. After all, the argument runs, if one-and-a-half years are going to be spent in the schools, are not the opportunities to sample content areas or to go into depth in a particular field, such as literature, history, or languages, seriously restricted? If anything is seriously restricted by my proposal it is the technique-methods courses; furthermore, it is explicit in the proposal that the student will have far more opportunity to elect courses—more opportunity, in fact, than the student ordinarily has now (although with each passing year more and more colleges are allowing the student more opportunity to determine his own program). By restricting the technique-methods requirement to no more than two one-semester courses, which could be taken in summers, I am not joining the camp of critics who view these courses as unnecessary. I very firmly believe that knowledge of subject matter in no way guarantees effective teaching. Given the year the student will have had in the schools, plus the half year of practice teaching, I would maintain that two one-semester courses are sufficient, perhaps more than sufficient. Please note that these two courses would be the *only* course requirements for becoming a teacher.

We are all familiar with the increasingly frequent practice of allowing a student academic credit for a year abroad or extensive field work that he has chosen. Basic to this practice is the assumption that experiencing another culture, or experiencing intimately a facet of one's own culture for the purposes of learning as well as broadening one's outlook, can help liberate one from a parochial viewpoint. The aim of the *liberal* arts is to liberate one from the shackles imposed by limited experience. Up to a point this can be done in conventional courses, but it is hard to be impressed with how near this point is to the goal we set. It is my expectation that the year the student spends experiencing and learning about the culture of the school will turn out to be one of his most intellectually liberating experiences. I should emphasize that that year in the schools is explicitly for the purpose of studying and understanding the complexity we call a school or school system. It is not for the purpose of learning a trade. The aim of the year is not to indoctrinate but to liberate.

A second objection to my proposal focuses on the student's spending either the first or second year in the school. The objection, most simply stated, is that the first- or second-year college student is not mature enough either to assume meaningful responsibilities in the schools or to gain the kind of conceptual understanding that would justify the duration of the experience. The objection is a familiar one. It was raised years ago against the suggestion that medical students should in their first year be exposed to and experience the realities of dealing with human problems. It was similarly raised against the suggestion that the clinical-psychology student should not have to wait until his third year of graduate work before he was given any significant clinical experience. In both fields the first two years of training were almost exclusively devoted to "basic" courses or foundations, although some individuals always pointed out that whatever was basic in those years was far from basic to understanding and managing "real-life" problems. Now, however, the situation is changed drastically in both fields. I am knowledgeable about training in clinical psychology and there is no doubt in my mind that the early exposure the student now gets in some programs makes him a better clinician *and* psychologist. The point is that this type of objection to my proposal runs the danger of producing the adverse consequences of the self-fulfilling prophecy, that is, the belief (which is what it is) in immaturity results in actions that produce behavior confirming the belief.

Of course the first- or second-year student will not gain as much as a fourth-year student or as much as those who are objecting. Of course he will make errors, create problems, and accelerate the growth of gray hair in his supervisors as well as feed their homicidal tendencies. These possibilities are no more than par for the course regardless of the age level of the student who is beginning to deal with the realities of the world. It is very hard for supervisors to bear in mind that they should judge the efforts of students not by what they, the supervisors, have experienced, but by what their students have experienced and learned.

The third objection is genotypically similar to the second one. Whereas the second objection questioned the capacity of the student to manage and profit from the experience, the third objection questions the capacity of a school system to organize and man the program in ways that would be consistent with its aims. The objection has almost always been voiced by my colleagues in academia. In my recent book (1971) I discussed in some detail the mixture of truth, snobbishness, and blindness upon which rests the critical and derogatory view of schools held by university people, and I shall not attempt here to summarize that discussion. I need only state that although I tend to view our urban school systems as somewhat like a disaster area, they also contain pockets of health and boldness and some individuals of surpassing competence and courage. The problem, which is discussed in a later section, is not that there is no one to work with but that our accustomed ways of introducing change in the schools almost guaran-

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tees that one will only see the negative aspects of the school system.

But this objection to the proposal can be viewed as providing the strongest support for it. Please recall that the aim of the proposal is to expose the student to the realities and complexities of the school culture and that there is no intent to gloss over its inadequacies. (The latter is precisely what tends to happen in the usual teacher-training program in which the student is apprenticed to a master teacher—a narrow and even cloistered experience that ill-prepares him for life in the school.)

> I suppose I feel strongly about these matters because a lot of my experience has been with the young teacher in the inner-city school about which a number of people have written a good deal. I am thinking particularly of those who were becoming outstanding teachers, and those who had the potential to become good teachers All of them chose to teach in inner-city schools. Some left teaching after a year or so, others stayed on with the knowledge that they would someday leave, and some succumbed in the sense that they retrogressed rather than progressed as teachers and as individuals. To understand their development and fate in individual terms would be grossly incomplete. Similarly, to look only to external factors ("the school or the system") would also be a partial explanation, although these young teachers tended to explain everything in terms of such factors. What became clear to me, as a participant observer and helper, was that the problem could not be formulated in cause and effect terms or by dichotomizing factors into external and internal. Their inadequate formal training for the realities of the classroom, their sheer ignorance of and lack of preparation for what life in a school would be, the demands and willingness to give and the consequences of sustained giving in a context of constant vigilance the absence of meaningful helping services—all of these and other factors interact in ways that should make simple explanations suspect. I have by now seen many inner-city schools demolished and new ones built with the not surprising result that the more things change the more they remain the same (Sarason, 1971, pp. 171-2).

I would maintain that the failure of existing programs to expose the student to the realities of the school culture is a large factor in his subsequent disillusionment, lack of growth, and abandonment of hope—consequences that, in turn, are lethal for the educational experience of children. If the schools are as bad and as hopeless as their critics say, ethical considerations should lead the critics to require that those who will work in the schools know what they are like. These considerations aside, I believe that there are no insuperable obstacles to a program jointly planned and administered by the schools and colleges.

The final major objection concerns the selective effects of the year on the students. Concretely, the argument runs, is it not likely that those students who tend to be nonconformist and independent of mind will be disheartened by the experience and give up any thought of a teaching career, while the more compliant, intellectually unassertive student will pursue such a career, the net result being that our schools will be manned primarily by unimaginative, conformist teachers? This argument is a strange one because those who articulate it have on other occasions argued in precisely the same way about existing programs, with the additional argument that these programs are stifling and unchallenging. Their objection to my proposal is somewhat in the nature of a compliment in that it contains the suggestion that the year in the schools will indeed be an instructive one. But there are other grounds on which I would reject the seriousness of the objection. I have been profoundly impressed with the number of undergraduates who, on their own, as individuals or in groups, have become involved in our urban school systems and, as a result, have decided to make education their careers. Far from being disheartened by their experiences (although some have been), a number of them have felt a moral obligation to enter the field. We should not be surprised—their involvement in schools is but one aspect of their generation's serious concern with the problems of race and poverty. Of overriding significance here is that two things have happened when some of these students have entered teacher-training programs: They perceived discrepancies between their experiences and course content; and their articulateness, fervor, and suggestions had some positive effect on redirecting the programs. I do not want to overemphasize what some students accomplished, but wish only to indicate that the fact that they had a base of experience to draw upon had constructive consequences.

Again The Problem Of Change

Even if I were able to convince the critics of my proposal of the error of their ways—a possibility enjoyed only by the indulgence of fantasy—we would be faced by the most difficult of problems: How does one implement the plan so that we do not end up proving that the more things change the more they remain the same? The proposal clearly requires colleges and school systems to make a variety of changes. But both are highly complicated social systems with long-standing and conservative traditions that come to the fore most clearly when they are faced with the possibility of change. By this statement I in no way intend criticism. If I am critical at all, as I tried to make clear in my recent book (1971), it is of those proponents of change who proceed as if these institutions did not have a culture of traditions that, if not taken into account, doom intended changes to failure.

Candor requires that I note that school personnel have (with very few exceptions) responded favorably to my proposal, and most of the criticisms have come from university people. When I have reported these reactions to university people, their usual response has been that this difference in viewpoint reflects well the differences in the intellectual traditions between schools and colleges. I quite agree that there are some important differences but I have to point out that what transforms these differences into unnecessarily heightened levels of conflict and controversy are the value judgments placed on them, that is, the tendency to judge differences on such dimensions as good-bad, superior-inferior, cultured-ignorant. It is these judgments that permit school personnel to view their university counterparts as overprotected theorists who make a fetish of irrelevance, and allow university people to view school personnel as low-level tradesmen for whom gimmickry and the technical are a substitute for thinking. (Cold wars did not originate in the international arena.) The university looks at the schools as an underdeveloped area requiring foreign aid, and the recipient of this aid looks to the giver with all of the ambivalence to which the state of dependency gives rise. I would like to believe that my proposal, rather than becoming another weapon in the arsenal of conflict, could make a modest contribution to better understanding, which would require that we start with the complexities of reality and not with the simplifications of stereotype.

Several caveats would guide me in attempting to implement my proposal:

1. Those college faculty members who are essential to the implementation of the proposal would have to determine for and by themselves whether they wish to participate. The point here is that the decision should not be made by a departmental chairman or some other college official. Furthermore, these faculty would be given the responsibility of working out the details of the program and allocating responsibilities. Obviously, what I am emphasizing here is that unless the relevant faculty are behind the proposal it is best not to proceed. I have seen too many changes initiated without the support (indeed with the hostility) of the faculty that later ended in failure and recrimination.

2. What has been said about the college holds also for the school. There are, however, special problems in that the faculties of our schools play a significantly lesser role in decision making than the faculties of our colleges. Unless this fact is squarely faced, and unless teachers are well represented in all phases of program planning, one should be hesitant to proceed. Since my proposal would involve the student in all major activities of the school, representatives of these activities must be on the planning committee. I would strongly urge that teachers make up the largest single interest group on the committee.

3. There are several major tasks with which the planning group will be required to grapple: how it will be governed; the problems that can be anticipated; the means or rules by which problems and dis-

agreements will be resolved; and the information-giving vehicles that will be required to reach those individuals and groups who directly or indirectly will be affected by the program. A further complication, of course, arises when both planning groups merge or start meeting because it is at this point that issues of status, power, and responsibility inevitably arise and, in the modal case, are never confronted; the end result is usually that everyone blames everyone else for "lack of communication." In point of fact, communication is usually rather clear in that by action and words signals are sent that the nasty issues will not be discussed. Unless these groups, singly or together, can agree on a viable constitution that realistically reflects the facts of organizational life, we have no reason to expect other than surface change.

(I am tempted to suggest the rule that my proposal should not be undertaken with government support. For one thing, the necessity of meeting submission deadlines too frequently produces an application that is premature in that agreements have not been adequately discussed or clarified. In addition, and of great future significance, the premature application usuually describes a time table that is unrealistic. Finally, the fact that one receives a grant sets off a series of decisions and actions, in the context of *having* to act, that often produces dissension in the planning group. Frankly, I do not see why a grant would be necessary to implement my proposal, and I make these comments for two reasons: I have seen many instances where the process of application writing and implementation set in motion all kinds of alienating forces in the planning group; and I take a dim view of the tendency, sometimes literally an automatic one, to seek a grant for programs that should require no outside support. To some, mine may seem a reactionary position, but experience has forced on me the conclusion that "getting and spending," to use Wordsworth's phrase, is not without its dangers. Anyone interested in the problem of change who bypasses this source of self-defeating problem proceeds at his peril.)

4. Once the program starts the students will be required to form their own group or groups for the purpose of preparing a monthly written review and evaluation of their experiences.

Conclusion

The guidelines are quite inadequate as a plan of action but they were not presented for such a purpose. They were presented in order to make the point that the process of initiating and maintaining a desired change in our schools is not an engineering or delivery-of-service problem. For example, somebody does not like the old math, somebody develops a new math curriculum, it is made available for sale and use, teachers are trained in the new math, and the teachers then teach it to children; the goods have been delivered! As I have described in some detail, the only thing wrong with that way of initiating and maintaining change is that it does not work.

We have not and do not lack for good ideas about how our schools should be changed. What we have lacked is anything resembling a productive theory of the change process. Because I firmly believe that there are no more important problems to be tackled than describing the modal process of change in our schools and conceptualizing the process in new ways--problems of more importance than those to which my proposal were addressed—I wish to conclude this paper with a series of statements I made earlier (Sarason, 1971) in analyzing a particularly outstanding failure in the education realm.

> It can be assumed that an attempt to introduce change into a setting with which one is relatively unfamiliar is likely to misfire. But what we have seen . . . is that familiarity with a setting is no guarantee against failure. What has emerged is the centrality of one's conception of the change process when one is dealing with a complicated social setting. To further our attempt at clarity as well as to see the dimensions of the problem better, I shall list and briefly discuss some characteristics of, or requirements for, a theory of change. At best this represents a small step toward the goal of engendering in others a greater awareness of the importance of the problem.
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> 1. An initial requirement of a theory of change is that it be appropriate to, and mirror the complexities of, social settings. It must explicitly recognize that settings are differentiated in a variety of ways (e.g., role, power, status) that make for groupings each of which may see itself differently in relation to the purposes and traditions of the larger setting and, therefore, perceive intended change in different ways. For example, a department of psychology is made up of psychologists, and there is the tendency on the part of outsiders gratuitously to assume that they have a great deal in common, which indeed they do. But the outsider only rarely acts on the basis of something he knows: that there are different kinds of psychologists or psychological fields, that there are different statuses (instructor, assistant professor, etc.) within the department and even within one of the specialties, that there is a chairman—that these and other dimensions produce groupings, formal and informal, that make a mockery of the outsider's assumption of communality among members of the department.
>
> Few things bring this out as clearly as a proposal to make an important change in the department. Then, and usually only then, does one see how a group of individuals, possessing many formal characteristics in common, breaks down into small groupings each of which is acutely aware of how it differs from the others. A single department, only one of many making up that highly complex culture we call (so simply) a university, is inevitably a highly differentiated set of relationships. In a very formal sense a theory of change must contain statements that would force an agent of change to deal with or look for the rele-

vant dimensions and relationships. In my experience, *in practice, most explicit and implicit conceptions of change derive from the language and vocabulary of an individual psychology that is in no way adequate to changing social settings. The fact that one can be the most knowledgeable and imaginative psychoanalytic, learning, or existentialist theoretician gives one no formal basis for conceptualizing the problem of change in social settings. The problem is simply not one to which these individual theories address themselves.*

2. It will be, I think, axiomatic in a theory of change that the introduction of an important change does not and cannot have the same significance for the different groupings comprising the setting and that one consequence is that there will be groups that will feel obligated to obstruct, divert, or defeat the proposed change. *Recognizing and dealing with this source of opposition is not a matter of choice, preference, or personal aesthetics. The chances of achieving intended outcomes become near zero when the sources of opposition are not faced, if only because it is tantamount to denial or avoidance of the reality of existing social forces and relationships in the particular setting.* When the problem is faced, and in what ways it could be dealt with, are tactical questions consequent to the more basic decision that the problem cannot be avoided. It can be avoided, of course, but that is why the natural history of innovations is not pleasant reading.

3. The history of the change process may be viewed as a series of decisions that increasingly involve or affect more and more groups in that setting. The decision-making group is usually small and not representative of all those who will be affected by its decisions. How does one determine representatives? Is it self-evidently desirable that decision-making groups should *always* be representative? If not, how does one determine when it should become representative? What might be the relationships between degree of representativeness, on the one hand, and outcomes, on the other hand? The assumption made by some that representativeness is a virtue second to no other may be justified by some scale of values, but its relation to outcome is by no means clear and will not be clarified by fiat or dogma. *The requirements of leadership and the demand for representativeness are often in conflict and not easy to reconcile in decision-making—their true relationship is too frequently cloaked in the language of rhetoric or public ritual.*

4. Any attempt to introduce change is accompanied, implicitly or explicitly, by a time perspective that, so to speak, tells one when something should be done and when certain outcomes are to be expected. A comprehensive conception of the change process must be formulated with at least two questions relevant to time perspective in mind: Why is there frequently underestimation of how long it takes to initiate the change process—an *underestimation* that can arouse such feelings of anger or discouragement that it may result in aborting the process or in enveloping it in an atmosphere inimical to the intended outcome? Why is the estimation of time necessary to achieve intended outcomes usually *a gross underestimation*?

> I have had no intention of conveying the impression that it is possible or desirable to formulate or conceptualize the change process in cookbook style. My aims have been much more modest and realistic. Initially, my major aim was to labor the obvious: we do not possess adequate descriptions of the change process so as to allow us to begin to understand the high frequency of failure or the occasional successes. The second aim of the discussion was to indicate that the relationship between knowledge of and familiarity with a setting, on the one hand, and the conception of how to introduce change into it, on the other hand, is by no means a simple or self-evident one. As a consequence, what emerged as a central problem was the conception of the change process itself, not only in relation to concrete settings like the school or university, but as a general problem arising whenever there is an attempt to introduce change into complicated social settings. In this connection I attempted . . . to suggest some of the ingredients that would comprise a general statement of what is involved, or should be involved, in one's formulation of the change process; the kind of general statement that can act as a form of control over tendencies to oversimplify and overpersonalize the nature of the process.
>
> Underlying all of this discussion has been the assumption that as more people become aware of the importance of the problem and issues, and as more systematic efforts are made toward a comprehensive general statement, those who initiate and engage in the processes of change will find it difficult to avoid recognizing and facing the complexity of what they are about. At the present time it is all too easy "to play it all by ear." Given the choice, I would much prefer a performance determined by a more reliable and structured vehicle. Even the possession of perfect pitch in no way insures an enjoyable musical outcome (Sarason, 1971, pp. 58-61).

Improvement of our schools will be primarily determined by the degree to which we focus on and become more sophisticated about the processes of institutional change.

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Reactions: Teacher Preparation And The Problem Of Change*

Louis M. Smith

Before responding directly to Professor Sarason's paper, I would like to indicate the context from which most of my remarks are derived. First, I've been trying to teach educational psychology for the past 15 years in the Graduate Institute of Education at Washington University. I have taught the general course at the undergraduate level, more specialized graduate courses, and other courses including tests and measurement, mental hygiene, social psychology of the classroom, and curriculum evaluation.

Second, during the last few years, some of my colleagues and I have been approaching educational problems with a research stance that goes by such names as participant observation and field studies. One of my colleagues has called it the "microethnography of the classroom"; another has called it "qualitative psychomystics." Any of these labels seems preferable to that of "collecting anecdotal records."

Three of our anthropological-type investigations seem especially pertinent to this Conference and to the particular paper at hand. In one I spent almost "all day-every day" throughout a semester sitting in the back of a seventh-grade class in an urban classroom trying to understand how a middle-class teacher copes with a group of lower-class children (Smith & Geoffrey, 1968). The second study (Smith & Keith, 1971) involved a year's observation in an innovative suburban school. Here we were particularly concerned with the origins of the organizational structure in the school. In the third investigation (connor & Smith, 1967), we followed several teacher apprentices through a relatively unusual professional socialization experience, what we came to call a "two-by-two" program. They spent two weeks in kindergarten, two weeks in first grade, two in second, and so on through the eighth grade.

Each of these studies has had considerable emotional and cognitive impact on me and on my teaching of educational psychology. Each influences strongly my reactions to educational change proposals and consequently, to Sarason's paper. As I read it, he made three quite basic points:

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* The research reported herein was supported by the Central Midwestern Regional Educational Laboratory, Inc. (CEMREL), a private nonprofit corporation supported in part as a regional educational laboratory by funds from the U.S. Office of Education, Department of Health, Education, and Welfare. The opinions expressed in this publication do not necessarily reflect the position or policy of the Office of Education, and no official endorsement by the Office of Education should be inferred.

1. Limited resources is an often neglected *given* in planning social change.
2. A major improvement in the quality of teacher training can be obtained by having undergraduates "spend one full year in a school system."
3. We need "a productive theory of change processes."

It is to each of these points that I would now turn. Beyond a simple agreement or disagreement, I would hope to indicate additional or alternative aspects as these have arisen in the intensive case-study research mentioned earlier.

Limited Resources

I am in fundamental agreement with his first point: Limited resources are a necessary given in thinking and action regarding educational change. Within the public sector one of the large truths of the 1960's is that American productivity cannot simultaneously wage a 25- or 30-bilion-dollar-war, develop a 5- or 10-billion-dollar aerospace program, build a foolproof ABM defense system, and revitalize the housing, schools, hospitals, and transportation systems of urban metropolises and meet the growing ecological and population problems. Priorities must be set.

The schools as public institutions also are faced with the same context-scarce resources and almost unlimited needs. Priorities must be set. It is an open question whether the schools will be willing to spend money for additional psychological specialists when those dollars are in competition with lowered teacher-pupil ratios, supplementary curriculum material (books, workbooks, pencils, and paper), and the new and expensive technology, for example, overhead projectors, computers, and language laboratories. Educational economists have not made clear the choice problems of multiple attractive alternatives and limited resources. Substitution of activities and reallocations of resources rather than major additions of resources is, in some ways, an unfortunate but realistic starting point.

Alternatives in Teacher Training*

The major "practical" proposal in the Sarason statement involves each teacher-to-be in a year's experience in a school system. I find myself in sympathy with the issues that provoked his suggestion, that is, the several kinds of unreality in teacher education. In addition, most of the hypothesized objections to his proposal are demolished in ways that seem reasonable to me. My friendly quarrel with him lies in two strong desires: (a) I would like to "get bogged down in the details of the year," and (b) I would like to explore his statement that "the major aim of the school is meaningfully to expose the student to the culture of the school." "Meaningfully" and "expose" are the concepts that trouble me. To explore them, I must return to some ideas and data from our observational investigations of schooling.

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* These comments are expanded at considerable length in Conner and Smith (1967) and Smith (1971).

The Special Problems of the Preservice Trainee

In my opinion several interconnected major problems face the preservice teacher. Much of the dissatisfaction with teacher education often seems to occur because the major efforts of teacher trainers focus elsewhere than on these problems. First, most preservice teachers have very limited perceptual backgrounds and images of classroom life—especially as these images occur from the position and role of teacher. Attempts to talk and theorize about classroom events without building such images are fruitless. Psychologists might contribute markedly to the clarification of kinds of image and training requirements for this kind of learning.

Second, as we observed our apprentices, we were impressed with what looked like the development and learning of a skill. Hypothetically, if one poses the problem of teaching as a skill, then the literature and mode of approach from the skill-learning area might provide a fruitful way of exploring what it means to learn to teach. Psychologists have had considerable experience in skill learning; presumably some of it is transferable.

Third, most teacher trainees carry strong adient-avoidance motivations regarding their ability to carry out the day-to-day processes and skills of teaching a group of children. In the adient sense, the trainees want to try their hand at "*making the animal behave*," by which we mean that they are eager to teach lessons in reading, arithmetic, and the other curricular areas, and to test their abilities in what we have called the core interpersonal skills of teaching. On the avoidant side of the motivational coin, almost all are at least somewhat fearful that they will not succeed—at least as well as they would like to—and some are extremely anxious about any success whatsoever. In this situation, extended discourse about teaching bores those who are essentially adient and frightens those who are essentially avoidant. With some trainees, the usual education course—be it methods, psychology, or foundations—does some of each. In addition, as the practice of teaching gets underway, considerable anxiety is generated. Such affect mixes with earlier enthusiasm and boredom and with each individual's conception of himself in relation to the new role of teacher.

On occasion, we, as accepting observers outside the authority structure of the program, found ourselves playing a major and unanticipated role in the lives of the apprentices. The cooperating teachers, supervisors, and principals played similar roles in varying degrees; they often were hampered by status differentials and evaluation responsibilities. Ultimately, training programs must recognize these dimensions of the system and build mechanisms to alter the more debilitating consequences. Psychological theory and practice should have some relevant things to say about this aspect of the special problems of the preservice teacher.

Training Alternatives

Within the context of a preservice teacher-training program, and within the context of our view of the special problems of the undergraduate (limited images of schools, need and desires for specific skills, and the affective interplay of anxiety and confidence), there are some explicit alternatives to Sarason's relatively undefined "year in the schools."

For instance, in regard to the image problem we have tried having teachers make a brief observation of an elementary or secondary classroom as a prelude to discussions in educational psychology. More recently, we have elevated such a task to a major focus in the program. Roughly, the trainee spends four or five clock hours over several consecutive days in the same classroom. During his stay, he collects careful field notes of the events of each hour. His primary purposes are to produce a description of the classroom in what we have called the everyday or "lay" language and to formulate an initial set of concepts and hypotheses that will help him explain what he has seen. While these purposes sound simple, they can be extraordinarily difficult and challenging to trainees of varying abilities, backgrounds, and interests. In effect, we have taught them the rudiments of participant observation as we have practiced it. In turn, they have brought considerably more sophistication to our analysis of *The Complexities of an Urban Classroom* (Smith & Geoffrey, 1968). Reciprocity, discussions among peers, and so forth are abstract ways of indicating some important and exciting side effects.

Ideally, as concepts and hypotheses are generated from the microethnographic activities, the trainees would extend their knowledge by trying to operationalize their positions in laboratory experiments and emulate the mode of inquiry of the laboratory psychologist. For instance, considerable interest exists among students in teacher styles and classroom discussions. As class exercises we have replicated a number of Maier's multiple role-playing experiments (Maier & Solem, 1952; Maier, Solem, & Maier, 1957) in which techniques for handling minority opinions, developmental discussions, and creative solutions are central issues. Involving students in the designing and carrying out of simple experiments as part of their training program will hopefully make some of their reading less an exercise in verbalisms and more a meaningful way of extending images and ideas about classroom social systems.

Another major technique that we see as important in developing an understanding of classroom processes with teacher trainees is through complex simulation activities. While we have not implemented the approach, the format, as it accents the decision-making skills of the teacher trainee, seems exceedingly important for the sophisticated development of the student's awareness of multiple consequences of action and for moving many issues from the "latent and unanticipated" category to that of manifest and manageable.

The reports emanating from the Stanford University program on microteaching suggest that the technique of building micro-experiences into teaching is quite fruitful (Allen & Ryan, 1969). "Micro" in this sense means limited purposes, limited time, and limited class size. I have had no personal experience with the technique, but find it theoretically very compatible with our analysis of teacher decision-making, the issues of confidence and anxiety in apprentices, and the conception of skill components in teaching.

As our thinking has progressed we have been concerned with a social-system stance in teaching and with a total training program that develops, at least hypothetically, the teacher into the kind of person to carry out the task demanded. It has long been recognized in the field of teacher education that the practice teaching or clinical aspect is crucial. In fact, historically, the methods of teaching, observation and demonstration, and practice in teaching have been the most dominant elements of teacher preparation. The practice in teaching has occurred under a number of formats. We have been favorably impressed with some aspects of the "two-by-two" experience (Connor & Smith, 1967). The possibilities of blending this kind of student-teaching format with the more typical extended exposure to one teacher and one group of children have not been explored. Similarly, the phasing of ethnographic analysis and micro-teaching with this kind of student teaching has not been carried out. Such conceptions are open to exciting verificative experiments across programs and institutions. Finally, a synthesis with the internship-type program, which is in some vogue in professional education today, has not been carried out.

I would argue that Sarason needs to see his "one year in the schools" in a considerably broader perspective—the career of the professional teacher. For many years, psychologists have studied vocations and careers. Little of this has sifted into education. A major effort would be required to abstract, synthesize, and apply that body of psychological effort to the problems of teacher training. For the moment we return to data and speculations out of our observation. For example, if a teaching career is spread over a time line and units struck off at the pre-practicum period, the apprenticeship, the first year of teaching, the probationary period, and finally the long span of the professional career, it is possible to view teacher training in a larger context. If we trace across this time line a half-dozen categories of events important to teaching, perhaps we can lay the groundwork for the richer analysis of teaching. Six possible threads are (a) general liberal arts education and academic specialization; (b) concrete images of teaching; (c) core interpersonal survival skills; (d) idiosyncratic style of teaching; (e) analysis, conceptualization, and inquiry about teaching; and (f) non-classroom roles in teaching.

One might argue, hypothesize, and even investigate the consequences of what might be phrased as "phases and emphases in teacher training." Presumably, liberal arts and academic development are accented early, fall off in the beginning years of teaching, and rise in importance over the long span of the professional career. The images of teaching are important early and drop off rapidly in importance after the apprenticeship. Survival skills are critical during the probationary period of the first few years of teaching. Idiosyncratic style, inquiry into teaching, and non-classroom roles develop gradually over the years and should be a major source of meaning and satisfaction in the teacher's life. (For a fuller discussion of these phases and emphases, see Connor & Smith, 1967.)

Conclusion

I share much of Sarason's disenchantment with the standard contributions of psychology to education. His perceptions of the problems within much of teacher education ring very true. The few points of disagreement, or perhaps of specification and elaboration, arise because I find myself still listening to an earlier plea:

> . . . no problem area in education is as unstudied and as important as the practice-teaching period. What are desperately needed are studies which have as their aims a detailed description of what goes on between neophyte and supervisor, and explication of the principles which presumably underlie the ways in which this learning experience is structured and handled, the values implicit in these principles and their execution, the efficacy of the experiences which do or should precede practice teaching, and the development of procedures that would allow us to evaluate the effects of practice teaching on the neophyte teacher, procedures which would be better than private opinions (Sarason, Davidson, & Blatt, 1962, p. 116).

That call must be answered if the present proposals are to have practical and substantive vigor.

A Theory of Change

Sarason's third point, the need for a productive theory of change, also seems to be well taken. To me, it is a sub-issue of the need for more viable cross stimulation and synthesizing among social scientists, for example, psychologists, sociologists, and political scientists, to name only three groups. For instance, two of Sarason's sentences read,

> Since my proposal would involve the student in all major activities of the school, representatives of these activities must be on the planning committee. I would strongly urge that teachers make up the largest single interest group on the committee.

Two of the basic concepts in these statements, "representative" and "interest group," have a long and stormy history within political science, so I'm told. Presumably, political science has relevant concepts, propositions, and theory that would help psychologists and educators like ourselves think more productively about the problems of change in the public schools.

Whether Sarason would want to go as far as Phil Jackson (1968) and call a moratorium on applying learning theory, measurement theory, and clinical theory to understanding or changing classroom social settings, I'm not sure, but at least one of his italicized statements is strongly reminiscent of Jackson. Sarason wrote,

> In my experience, *in practice, most explicit and implicit conceptions of change derive from the language and vocabulary of an individual psychology that is in no way adequate to changing social settings. The fact that one can be the most knowledgeable and imaginative psychoanalytic, learning, or existentialist theoretician gives one no formal basis for conceptualizing the problem of change in social settings. The problem is simply not one to which these individual theories address themselves (Sarason, 1971, pp. 58-61).*

We (Smith & Keith, 1971), in attempting to understand Kensington, our innovative elementary school, found that sociological concepts such as formal doctrine, mandate, facade, liability of newness, true belief, administrative succession, and teacher turnover helped us to think more clearly about what happened in the lives of parents, children, teachers, and administrators as they attempted to implement the "new elementary education." More particularly we described the problems of organizational innovation in terms of three broad strategies: the alternative of grandeur, temporary systems, and minimal prior commitments. In essence, *the alternative of grandeur* was an attempt to shift all the interlocking elements of a total school so that no one innovation was hampered by any other element in the school. A contrasting orientation has been labeled a "gradualist strategy" (Etzioni, 1966). At Kensington, *multiple temporary systems,* for example, workshops, T-grouping, consultants, and protected subcultures were major "innovations facilitating innovation." *Minimal prior commitments* referred to an innovation strategy accenting inexperience in traditional teaching and newness to the organization; the necessity of undoing prior habits and relationships was to be avoided. The full story of the innovative year has elements of courage, hope, and tragedy. My purpose here is merely to indicate that events involving change are amenable to research and theory albeit somewhat different from what education psychology usually stresses.

Conclusion

Needless to say, I found Professor Sarason's remarks eliciting sympathetic affect. My central purpose has been to elaborate and differentiate his ideas in the context of some of my recent work, thereby contributing to the expanding discussion. I hope that other psychologists will take the issues seriously, for the problems of psychology's relation to education are large, demanding, and critical during this decade.

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Oral Presentation

S. B. Sarason

Why is it that the more things change the more they remain the same? My concern with this problem started when I was in college and wrestled with the question of why the Russian Revolution had failed. Here was such a massive, marvellous opportunity to change society and it failed miserably, both from my standpoint and in terms of the aims of those who wanted the revolution. The same question interested me in relation to the French Revolution. Then I became interested in the American Revolution and found that it was entirely different. While I am in no way even an amateur historian, I would like to suggest that the differences in the consequences of the three revolutions are very relevant to the process of any kind of change in any complex social institution.

As long as I have been a psychologist, I have been working in schools in one way or another. And always, I suppose, I have had a kind of missionary zeal in part of me that wanted to change things. Needless to say, I have not succeeded very often. It wasn't because of the uncooperativeness of other people or their perversity, I would like to believe, but there were reasons why success came so seldom. I felt I was in pretty good company, however, because John Dewey's attempts to change American education, at least through his writings, did not add up to very much. Yet he did a magnificent job in creating his own school.

The task with which we are confronted, however, is not how to create a new school but literally how to change an existing organization, and that is a very different cup of tea. The more I thought of this task, the more certain aspects of the problem became clear to me. Thus, when the funding of Headstart was announced with great fanfare, I was in a personal dilemma. On the one hand, I had to publicly support Headstart; on the other hand, everything I thought I knew anticipated failure for the program. I knew it would help some children, be harmful to others, and probably have no effect on most of them.

From Dr. Kohlberg's standpoint, Headstart was wrong and a failure for various conceptual reasons. I looked at the program differently. Headstart involved the recognition that our ghetto schools were a disaster area, and the program was based on the theory of innoculation. To me, the problem was, how could you innoculate preschoolers so that when they entered the ghetto schools they would have some sort of immunity to the disease of the schools? Another way of looking at the question is that Headstart realized that the problem was in the schools but they tried to bypass that problem and innoculate the children in advance instead. Of course Headstart failed. Now we have Follow Through. What comes next, I am not at all sure.

Headstart is a good example of the awareness that the culture of the ghetto schools is inimical to young children. But, on the other hand, no one faced up to the question of how you change the culture so that it won't have those effects.

As another example of the problem, let me expand on something that I mentioned in an earlier session: the introduction of the new math. A very good case can be made for the hypothesis that schools have been amazingly responsive to academia. Over the years, people in the universities have come up with great ideas and the schools have taken them over. In fact, they have taken them over much too uncritically, considering that the ideas came from their critics, and put them into practice. The result you know: The more things change the more they remain the same. I think that the best description I know of our urban schools was made by one of my colleagues: "the fastest-changing status quos."

We were in a position to observe how the new math was introduced in an entire system.* To me, it is an example of what might be called the modal process of change in a school or school system, whether the change is initiated from within or without. As you all know, of course, the idea of new math started from on high. Nobody within the system was clamoring for the change, least of all the teachers or children. In the suburb of New Haven that we observed, the clamor for change came from the math supervisor, the superintendent of schools, and the board of education.

Two diagnoses were made of the situation, one public and one private, which is characteristic of the modal change process in the school system. According to the public diagnosis, all that was needed was simply to change the curriculum. The private diagnosis was, yes, the old math curriculum is no good but, let's face it, the teachers aren't all that good either; if life in the classroom is one big, boring disaster, it cannot be attributed completely to the curriculum because the teachers cannot make it interesting. Needless to say, the private diagnosis remained private and the resources were brought to bear on the public aspects of the problem.

Various new maths were available so the people on top made the decision of which one to introduce. The teachers—the proletariat—were not consulted. They knew something was brewing but they knew that at some point they would be told what was going to be done. I would like to suggest at this point that the way in which change is handled in the school is genotypically identical with the way teaching is done in the modal classroom, that is, the teacher tells the children what they are going to learn and what they are going to do. Change is brought about in the system in the same way. You tell people what the change is and when it is going to be started.

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* Sarason, E. K., & Sarason, S. B. Some observations on the introduction and teaching of the new math. In F. Kaplan & S. B. Sarason (Eds.), *The psycho-educational clinic: Papers and research studies.* Massachusetts Department of Mental Health.

The people on top, however, realized that the new math would present problems to teachers, so they set up five-week workshops during the summer, paid the teachers to attend, and brought in master teachers. Here is where things got hot and heavy. The workshops were set up on the assumption that all the teachers had to do was to learn the new math. It never seemed to have occurred to these theoreticians of learning that teachers would have to unlearn the old math before they could learn the new and that the process would be difficult. As the teachers began to experience the difficulty of unlearning and learning, their anxiety mounted, more and more as it became clear, with the end of the workshops, that they were far from secure about their understanding of the new math; and, of course, they were faced with the task of teaching it to the children. I won't detail the disaster.

What were the aims of the new math? If you read the literature, the aims are given as something like the following:

1. Math can be enjoyable. It can be interesting. It can be stimulating. It can be exciting.

2. There are a lot of different ways you can think about numbers. In the old math, you only learned one way, but, obviously, there are a lot of different ways you can think about numbers. And there are a lot of different ways you can think about the world.

3. Children willingly engage in the struggle of learning the new math because it is exciting.

We did a not-so-informal observational study of the new math. The reason we didn't do the formal study is that when you went into the classroom and observed what the children were experiencing, joy is the last word in the dictionary that would occur to you. What made the situation so serious and frustrating is that everything was done with the best of intentions. It is much easier to deal with malevolent people than with people who say they are in favor of progress because you define progress by doing things differently. I would like to point out that the modal process of change in the schools is based on a mechanical delivery-of-services format. That is, you decide that what you need is a new curriculum; you write it, try it out, get quality people to deliver it, and then you teach it. And, by God, that's what it is all about. Well so much for what I call the modal process of change.

The reason I have emphasized the process is that to the extent that any effort at changing a school or a school system is based on a knowledge of the complexity of the school culture, to that extent it stands a chance of surviving up to a certain point. The other way of putting it is that practically every attempt to introduce change into the school culture has not taken into account what I think are the characteristics of the change process in the school culture. Now, you might think that this ignorance would only be true of people who were outside the school culture. The fact of the matter is that if you are part of the school culture it in no way ensures your understanding of how that culture works. What I am more and more impressed by, as I talk to different people in the school system, is how like a Rorschach inkblot the system is for them; you know, one person sees it in this way and another sees it in that way. Not even the superintendent comprehends the system qua system, and I don't mean by system anything that can be put on an organizational chart. Any effort to introduce change in the schools involves changing life in the classroom in one way or another, however direct or indirect it is. You want to change something in the classroom but what it is you want to change is never clear. For example, with the new math—some people said it explicitly, others implicitly—what they wanted to change was question-asking. You sat in the old math classroom and children did not ask questions. And that is not the way it should be. Children are curious and they have questions in their minds.

Somebody in our clinic got interested in this question-asking thing and he did a review of the literature and then a series of studies.* He came up with approximately a dozen studies from 1912 until two years ago on question-asking regularities in classrooms. (The first was a monograph by a woman named Stevens.) And he found that these studies agreed amazingly over the years. Then he did his systematic studies, and his results agreed with those of the published works. Remember that his work was done from the standpoint that if you want to change anything in a classroom, first you must know what its regularities are, and one of the behavioral regularities in the classroom is question-asking behavior. Going into social studies classes, grades 4, 5, and 6, first in suburban schools and later in ghetto schools, he found that the number of questions asked by children in a 50-minute period was somewhat less than two. Teachers ask questions at a rate of from 45 to over 150 questions in the same period of time. And I want to emphasize that his findings were similar to Stevens' in 1912.

I don't want to get into a discussion of why children should ask more questions or if question asking is inherently good, bad, or indifferent. On the assumption that question asking is an important regularity in the classroom, then you must ask of the change process in what way it will change this or any other kind of regularity.

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* Susskind, E. The role of question-asking in the elementary school classroom. In F. Kaplan & S. B. Sarason (Eds.), *The psycho-educational clinic: Papers and research studies*. Massachusetts Department of Mental Health.

I want to talk about Lindsley and Gattegno at this point because, if you remember, we were asking earlier how much effect they are going to have. What I prefer to ask is, what are their theories of change? and do the theories have to do with change in schools, changing systems, or changing individuals? It makes a difference. It seems obvious to me that Gattegno is interested in changing teachers but, if given the opportunity to change a school, he would. I think the same thing is probably true of Lindsley who would like to change systems too. But they are individuals. I would like to suggest that they have some options, and I am not sure that they see them as options. The question I am raising is, if you are an individual who wants to change schools, then must you not ask yourself, where do I start? That is a legitimate question. Instead of running around the country dealing with groups of teachers, of whom there are millions, do you say, "Maybe I ought to work with superintendents." Then the problem is, how do you work with superintendents so that they can do that thing for other people? Or you can say, "Well what about the school principals." But then, of course, you raise the question of what does a principal do? That is a knotty problem. You can say, "I'll work with principals because that will have more of a ripple effect than working with teachers." Or you can say, "I am going to work only with teachers of teachers," which is another possibility. What I am saying is something obvious; not every role in the school system has as great a ripple effect in terms of change as other roles do. If you are interested in the process of change, very consciously and deliberately you have to face the issue of with what groups do you work. You may decide it on personal grounds, grounds of convenience, or what have you.

As an example, what if the Office of Education were to declare Lindsley and Gattegno national resources? When you declare something a natural resource, then you say (a) it must be treasured and protected and (b) it must be available to as many people as possible. How could we use them in ways to maximize their effects? I think that question confronts you with the problem of what is your theory of change, and how is that theory related to your understanding of schools and school systems.

One last point. In a way it was cued off by what Gattegno said to me earlier, "You know, I've been doing this for 27 years." He said it with a smile and as if to say, "And I'm going to do it for another 27 years." I am sure that Lindsley in his own way is going to go on, too. And you say, what keeps them going? In a sense, what keeps us going in our own kinds of ways?

I would like to end with the following anecdote: We wrote a book describing the activities of our clinic. It was a very, very fat book but there was one chapter in it that, to our surprise, evoked the greatest spontaneous responses from teachers and other people. Whenever they would meet us, they would say, "That chapter really hit home." The chapter is called, "Teaching is a lonely profession." Its point is that a school is one of the most densely populated places on earth, yet a teacher with a classroom of children feels alone. We learned about that in working with teachers in our clinic.

Those of us who received our psychological training in clinics were brought up in the traditions of the case conference. One of the first things that hit me about the loneliness of school teachers was that the concept of the case conference does not exist in the school culture. People don't talk to each other. And it is even worse in the high school. Teachers feel alone; we don't. Now there are some consequences to this difference. (a) Over time, the loneliness has effects on the phenomenology of the teacher. (b) It means that teachers can't use each other in terms of one another's knowledge and talents. Schools are not set up in that way. I always bristle when I hear about share and tell in a school because it is obviously the child who is supposed to share and tell; nobody else ever does.

I have just mentioned a couple of things that I would subsume under the culture of the school. I think that what I am saying here is that first one has to understand the culture in the way in which those within it experience it, which isn't always clear from what they do. To the extent that we do not state clearly what it is we want to change—and not only in the classroom, which is why I brought up the loneliness of teachers—to that extent our efforts of change are likely to be further examples of—you know—the more things change, the more they remain the same.

Gattegno: The loneliness of teachers can be eradicated. In P.S. 133 in Harlem, five of the teachers have been taken out of their classrooms by the principal and made available for all the staff, and they meet every week with them. Things are happening.

Sarason: There is no doubt in my mind, and I think several persons mentioned it, that teachers look forward to Gattegno's and Lindsley's coming. Part of it is that they are interested in the teachers. But the question is, what happens when Lindsley and Gattegno pull out? I think that that is extremely important.

Backman: I may be completely wrong, but it is my understanding that privacy of the classroom is a rather pervasive norm; I know it occurs in universities and I am pretty sure it occurs in public schools also. Other teachers and people are not expected to intrude on your classroom. Now why? I think the answer will tell us something about one of the sources of loneliness. I understand that team teaching runs against this norm and that there is trouble with it.

Blocher: That's the norm of the self-contained classroom. Lots of schools don't have them any more. In the people I try to work with—trying to change schools—one of the first interventions that we teach is opening up communication with, within, and around the target system. Last summer I had a group that decided that their target system was the teachers who spent the fourth period in the teachers' lounge. Now my group is meeting once a week with those teachers to work on a change process.

Sarason: What you are saying is that it required somebody from the outside to plant the ideas, mold the direction, and give it a rationale. That's all right. I'm not quarreling with that. By the modal process of change in the school, I mean how changes take place that are generated largely from within. Gattegno and Lindsley are reaching X number of teachers—and I congratulate them for it—but when I think of the total number of teachers that are involved I cannot get all that enthusiastic about their work.

Birch: Suppose we accept the idea that Sarason has set forth a reasonable modal picture. Also, suppose we say that there is a good deal of variability, maybe more than his presentation suggests. Probably he would accept the great deal of variability although he has emphasized the mode. My question is, given and accepting an assumption that there is no or very little evidence on change process and how changes take place, where does that lead us? Instead of arguing about the validity of Sarason's picture, or whether there are data on change, what would be the next step?

Chairman: We are back on the target where we left off this afternoon, which is obviously on everybody's mind. I think we are at that point as a group where we have to look very hard at what the change process is all about. Let's stop now and give Dr. Smith an opportunity to respond to Sarason's ideas before we get carried away from that target.

Oral Presentation

L. M. Smith

I would like to tell you a little bit about some of the activities in which my colleagues and I have been engaging. I think they bear quite heavily on some of the things that Sarason has been talking about and some of the pleas that he has been making for the understanding of schools.

We have been involved, over the last 10 years or so, in doing what we call naturalistic observations or qualitative descriptions of ongoing school settings. We got into these studies for a variety of reasons: some dissatisfaction with what I thought psychology had to say about education, some hope of finding other ways of looking at education, and so on. We wanted to have a careful and clear description of the kinds of things that happen in the schools before we went pell mell into trying to change them, before we became involved in trying to alter systems that we did not understand.

I spent a semester sitting in the back of a sixth- and seventh-grade classroom in downtown St. Louis.* It happened to be mostly a white school in the sense that the children came from the rural Ozarks, Tennessee, and Kentucky. Primarily, we wanted to find out what an urban school was like and what were the complexities of this particular classroom situation. How does a middle-class teacher cope with such pupils? How does he carry on the day-to-day regularities or routines? I have two illustrations of the kinds of events in which we were interested.

We had, coming out of good Minnesota tradition, a concern with individualized instruction. In some ways, the class I observed was a very sterile, traditional, self-contained classroom, but reasonably early it hit me that, despite its being traditional and with all the horrors that are usually associated with the term, somehow the teacher was talking to an awful lot of individual children during the course of the day. In thinking about it, we developed a concept that we called "personalized interaction," which essentially means a two-step behavioral sequence in which the teacher looks at or talks to a particular child and the child, in effect, looks back at him or responds with some indication that he is in tune with what the teacher is doing. We were not concerned with reliability; we hope to solve issues of that kind on another day. I spent one morning out of the semester counting how many personalized interactions occurred. In about three hours, I counted 767, plus or minus whatever the unknown standard of error of that kind of thing is. The teacher—Geoffrey—was moving around the room, talking with individual children about arithmetic papers or spelling words that they had gotten wrong, and so on. One of the comments we would make about that experience is that even within what is labeled the sterile-traditional classroom, if you look at it more analytically, something that long ago I had been taught is very important can happen in terms of the teacher's individual attention to individual children across different subject-matter areas, and so on.

A second concept we raised out of our data was what we called "banter." Essentially, we would define it as a humorous three-item sequence in terms of three particular behaviors. The teacher makes a comment, the child comments back, and the teacher responds. The sequence could be initiated by the child also, but always there were at least three steps and there could be as many as a half-dozen. Many of the sequences that I observed were centered on a boy that we called Sam, the court jester of the classroom. The repartee was delightful between him and Geoffrey. Once, for example, Geoffrey called on the boy and Sam responded, "Oh, you can't call on me; I've already had one," when Geoffrey had indicated that he was only going to take each child once in the spelling recitation. Issues such as banter, the warm humor that was attached to it, the obvious joy that the other children got out of Sam's giving the teacher the business, the kind of sub-problems of how you terminate banter, and which kind of children you introduce it to, then led us into conceptions of the roles that children play in the classroom—some quite elaborate kinds of social interaction go on—and why they become defined not only in the behavior of the children but in the expectations of their classmates. It was a structure that, somehow, I had not learned how to handle with a personality test of some kind.

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* Smith, L. M. & Geoffrey, W. *The complexities of an urban classroom.* N.Y.: Holt, Rinehart, & Winston, 1968.

We have been very much concerned about what goes on in these self-contained classrooms. How do you describe it? How do you conceptualize it? And, ultimately, depending upon your biases and values, how do you change it? What parts of that traditional class do you want to get rid of? What parts do you want to keep? How many parts are there? How do you go about making changes in such a classroom?

After that semester, we had an opportunity to spend a year in a very innovative elementary school in which they were going to have team teaching, non-graded-ness, rugs on the floor, open space loft-type areas.* All of the new elementary-education ideas were going to be introduced. The other day, when Pribram mentioned some evidence on non-graded schools that showed their superiority, I was very curious about it because in that innovative school, we ran into the phenomenon of what Sarason called public and private diagnoses and what we came to speak of as the school's facade. The public image presented was not the reality that we observed from our day-to-day observations. The facade was written up in local newspapers and in national periodicals (on two occasions). Literally hundreds of people like us were in and out of the school on one- or two-day visits to find out what it was like and they got the facade—the party line. They did not get the realities as we did as we sat in the school.

We were there all year. It was a most interesting anthropological view of another culture. One of the most intriguing parts of that culture, which we were not sensitive to in the beginning, revealed itself in a sub-problem. We had observed in the slum school that the faculty peer group controlled the behavior of the individual teacher to a fare-thee-well. The norms in that group were as explicit and clearly functioning as any of the Festinger and Schachter materials on deviation-rejection. We had all kinds of beautiful graphic illustrations. Let me give you one.

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* Smith, L., & Keith, P. M. *Anatomy of educational innovation*. N.Y.: Wiley, 1971.

Geoffrey, the teacher, had up on the board in his room a chart with symbols that were to be used in the correction of English papers. For example "awk" stood for awkward, there was a symbol for commas, another for spelling, and so on. At recess time, when the teachers gathered for coffee, there was a bit more interaction among them and loneliness was not a sub-problem.

One day, when I was having coffee with one of the probationary teachers, he looked up at the chart and told me, "I never use those. I have my own symbol system." Hardly had he got the words out of his mouth before one of the women, a reasonably tough, rough, and ready teacher, just laid him out cold. "We've got enough trouble teaching these kids. We get a few rules set up here and you want to do something else. Dammit, you're not about to do this kind of thing!" Later, I found out that the woman was a good friend of the probationary teacher's supervisor who was constantly finding things wrong with him and giving him hell. The system was influencing him.

The problem of how a social-system faculty-group gets set was the one that took us into the new school. A part of the change issue was that a faculty had been brought together for the first time and they were to form themselves into a new teaching staff and build the school. So we were really looking at the problem of how the informal faculty structure develops in a school. Later, one of the interesting things we found was that the school itself had a theory of change. It was being implemented when the new elementary education was going into effect. In some ways, it was quite explicit, quite conscious; it was not a simple thing to explicate.

We identified three major elements in the theory. One we came to call the alternative of grandeur. If you are going to change a system, do you change the totality to capitalize on the systemic qualities—the notion that everything is interdependent with everything else—or do you use what the sociologist, Etzioni, called the gradualist strategy, where you chip away piece by piece at the whole system? The school had elected the alternative of grandeur; it was going to work on the whole. The building was new, especially designed; the curriculum was different, individualized instruction was instituted; the school administration was "democratic"; and comparable innovations were made in all the other components.

A second element was the high use of temporary systems. That's how the faculty talked about them. In a sense, they wanted to make the school a protected sub-culture and they had picked up the phrase somewhere. If you like, the school was to be kept apart from the contamination of the regular schools and it was to be operated as they liked. They had additional temporary systems: They brought in some T-group people for a week during the summer workshop, which was supposed to make the faculty into a group that could handle the process of change, and they had some consultants, to name just a few that come to my mind.

The third element was what we came to call minimum prior commitments. For example, relatively inexperienced teachers were hired. The administrative staff did not want to get involved initially in retraining. This and the other elements had an elaborate connection with the totality of the effort.

As researchers, we were entirely involved in the school and in the change. We started collecting data in the first week of August, when the faculty first came together, and we remained there through June for the closing-of-the-year faculty party. It was a most interesting year.

My summary comment, in a sense, is the only quantitative data in the monograph[*] that we published, and it occurs in the first part, in a discussion of the faculty at the end of the first year, the turnover. Out of some 20 or 22 faculty members at the end of the first year, only 8 returned for the second year and only 2 for the third. At the end of the first year the superintendent took a leave of absence. The principal left in the middle of the semester during the second year. I don't know the base rates for the phenomenon of a principal's leaving his school in February or March, but there is little question that it is highly unusual.

I became concerned, as a result of that experience, with the problem of people trying to change a system that they really do not know. I am also concerned with our tendency, in accounts such as mine, of looking for good and bad guys. Some of the very real bad guys are persons like myself, and most of us here, who are at colleges and universities. We haven't produced the knowledge that is needed about school systems, consequently, instant panaceas—fads—are accepted as substitutes. But fads come and go, sometimes at terrible personal consequences for individuals. In a sense, I am echoing Sarason—we don't know very much about change. Another of Sarason's points is that we, as individual psychologists do not really have a vocabulary of change. Since we are concerned with the problem, however, perhaps we should turn for help to the social psychologists, sociologists, and political scientists who know something about interest groups, constitutional arrangements, and institutional behavior.

Discussion

Backman: Dr. Smith's account of the new school was one of countless failures. As far as I can see, there were three reasons for them: (a) The school was always part of a larger system, which makes the creation of something completely different in the smaller unit extremely difficult. (b) Besides the fact that the smaller system is dependent on the larger for maintenance, the influence of the larger also creeps in through the people; even though the school tried to get inexperienced teachers, still they had been socialized in the larger system. (c) The functions of the smaller system are virtually the same as those of the larger; the functions make demands on the structure and, thus, lead to the creation of the same old kinds of structures, unfortunately.

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[*] Smith, L. M. & Keith, P. M., *op. cit.*

Sarason: I think Dr. Backman is right on the three reasons for failure. I would add that in the whole change business, one of our most important needs is a theory that tells us what our time perspective should be. What I saw in Smith's account was that change was expected to come about relatively soon.

The example that I use in discussing time perspective is an analyst's answer to the question of why analysis takes so long, why he has to see the patient four or five days a week for 2, 3, 4, or 5 years. The analyst starts by telling you his theory of the development of the psyche; then he tells you about the various obstacles that can be expected, such as the patient's resistance; and he gives you an idea of all the flak that he catches from the beginning to the end. From my standpoint, such an answer is one of the reasons that the development of the analytic theory becomes extremely practical in its consequences.

Young: Did Dr. Smith mean to imply that the change in the new school he observed was a failure?

Smith: I think the school did fail on the basis of several criteria you might want to pick—administrative succession, staff turnover, reversion to the "old Milford" style. It remained a very significant experience in the lives of many of the staff, however.

Blocher: Well, then, it changed! When Smith told me about the school earlier, he said it was changing at a rapid rate but not in the direction that any of us might want it to change. I think all human systems change all the time but the problem is how to facilitate positive goal-criterion changes in the system. The schools I know are getting worse every day.

Smith: That particular system was in high flux. There were subproblems, and I will mention some of them. Teachers with backgrounds in social studies or science were hired as specialists in a teaming arrangement for the upper elementary grades. When the teams didn't work, the school retreated to a self-contained classroom situation and the team teachers were caught between role specialization and the retreat to the generalist position. The teachers could not handle that change because the specialists had never, for example, taught reading to fifth-grade children before.

In our research roles, we were neither protagonists, coordinators, nor directors of change. We had a contract to do some research on the school system, which was instigated by the superintendent—another major innovation—and we were paid with school funds supplemented by Office of Education money. Initially, I opted to be out of the interventionist role entirely, contrary to Sarason's relationship of helping, but staying outside. Consequently, I was not privy to certain information but, as a kind of anthropologist walking around, I was privy to other information.

The superintendent, assistant superintendent, and principal were the primary agents in organizing the new school, developing the plans from the building on down, hiring the new teachers, and so forth. They were able people; and they provided the leadership although with some advice from outside consultants, some with national reputations.

Birch: They had a plan but it didn't work.

Smith: Yes.

Q.: Do you psychologists who are involved with education consider yourselves change agents?

Blocher: I consider myself as such at certain times in relation to certain schools.

Q.: Are we to act as facilitators or orientators of the change that is inevitable?

Blocher: Both. I think you kind of facilitate change in given directions that are goal-oriented but you must also assume that the system does not have the freedom to remain the same and is constantly changing so that you try to influence the direction the changes are taking.

Q.: Then what you are saying is that we inject a value if we orient the change?

Blocher: Certainly. We inject values into the system, especially when we engage the people we work with in value negotiations. What safeguards us is not our wisdom or good intentions but the process by which we try to develop change. Ethical values enter into the means we use. The ethical restraints that I perceive for myself are immediate. I am afraid of the change agent who claims that his ends are glorious so that he does not have to worry about his means.

Reynolds: One of the problems that I have when we start talking about change and change agents is in the widespread use of the terms. At the University where I work, the people—particularly the young ones—in the School of Social Work consider themselves to be change agents in the schools. In the Economics Department and the Business School, the people know all about systems and helping school people to organize and to set their objectives. Within the School of Education, the administrators, counselors, and special educators all are change agents. I see great big credibility gaps between myself and the claimants in the different departments because, as far as I can see, they are changing very little in their own structures. I don't think it would even occur to school administrators to invite a psychologist to our campus for a conference on change.

What particular contribution does psychology have to make to the problems of change in school systems? What can we do in our own province with the psychological components in the schools of education and the training of psychologists as sources of change? You are giving lessons to people in the schools, how about some advice for us? Is our best opportunity to start by changing our own situation? I am really turned off by psychologists who have to join a special club in order to make some changes when the whole institution is probably coming apart. Our concern seems to be with deficient development of change and omission of systematic provisions for renewal.

Chairman: Dr. Birch asked a question at the end of Dr. Sarason's presentation that, it seems to me, ties in with Dr. Reynold's. I would like to get back to that question so that we can stay on our target of what the change process is all about.

Birch: I said that supposing we accept the idea that Sarason's modal picture is correct but that more variability is present than his presentation suggested. On the assumption that there is little or no evidence on change process and how changes take place, where does that lead us? How do we modify each of the negative conditions that he described? How do we go on from there? What is the next step?

Chairman: Dr. Reynolds was asking (a) do we as psychologists know anything that gives us any special prerogative in making changes and (b) if we have any prerogatives to make changes in the schools, why aren't we using them at the university level?

Pribram: In a homeostatic view of society—whether it is nerve cells or individuals—you can change the bias and that will cause the whole system to gradually grind around to a new level. That is the only way to bring about change. A revolution does not do it; revolution means to revolve. You hope that it is going to function as some kind of a spiral but most of the time it just begets a reaction and you end up where you were before. Evolution, on the other hand, means that there is a gradual adaptive change, starting with the bias, and you work toward the change permanently and gradually over a period of time. If the top people in Smith's new school had stayed on, the chances are that in another 10 years they would have accomplished their goals.

Even though there is no commitment to direction except in principle in the system, natural selection and biological evolution take place and things keep evolving.

Backman: If you put up certain specific homeostatic arrangements or mechanisms in the social system, what is the tie-in among the normative, power, and status structures? When you start fiddling around with the value structure, it affects a person's status and power. It becomes pretty rough. From Smith's story, I gather that those mechanisms were disrupted with the result that critical people left.

Birch: I would like to submit that there was a plan of some sort in that school but it was faulty. A good plan is self-correcting; it has feedback to re-evaluate the system and it makes corrections along the way.

Chairman: I am not sure that we all heard what Pribram said up here. As I understood it, it was that any time you shift a value that beings to affect statuses, and so on, the system begins to blow apart. It is interesting to me that the kind of system that they were trying to open up in the school is one that would begin to affect statuses of a principal, supervisor, and superintendent, and they are the persons that left.

Pribram: That is where psychology has something to say, however. You must expect such reactions.

Backman: Can you relate what psychology knows to the system and to the individual?

Young: There are various reasons why so many of the personnel might have left. I am surprised that everyone has accepted the departures without asking why. I can see several alternatives immediately: Did any teachers retire? Were any thrown out? Did any run away? Were any promoted?

Smith: Not the latter. Actually, the situation gets more and more complicated as you uncover more. The district had a reputation for conflict: within the board and the community, between them, and between them and the superintendent. That situation had been going on for about three years. The prior superintendent, as I got the story, had been fired, rehired, and then put on some kind of special consultant business.

Young: What an unlikely place to try to change!

Smith: That is my point, in part. Another interlocking piece of the whole puzzle that we did not try to study much is the larger system—the community. It was essentially lower-middle-class and conservative, and the people were not pushing for the change. They liked traditional schools, which we have been—not condemning—wanting to change ourselves. The point is that if the ultimate resolution lies in some kind of democratic process with the people in the community deciding what they want, then our attempts to change many of these communities is in violation of that principle.

Chairman: For those who did not hear Pribram, he said that the problem of whether or not you change in a democratic system is not an ethical one, the ethics arise in how you go about attacking the entire system to change a part of it.

Scriven: Let's try to get back to the pay-off on the problem. Systems have introduced new curricula on a very large scale with very good results on a very large number of occasions. So we don't want to give up on it. We don't have the data on whether, in fact, we can absolutely test the hypothesis in use. It seems to me that we could make a list of checkpoints of a sort. We should not include any rash statements, such as you cannot ever change things unless you can involve the community, because it is pretty obvious from experience that the consultation with the community has to be extremely extensive and have a long lead time. Can we try to formulate such a list? Some of you who have been in these crisis situations may feel that it is nothing new but I would like to see us move toward something of that nature.

Blocher: One very simple rule, I think, could be that the change-inducing system—what I call the support system—must have linkages out to the next higher echelon. There must be a basis of support out into the superintendent's office, to the school board, and to the community that provides support and cohesiveness for the change-inducing or change-facilitating people. That is one of the elements that you build in when you take what I think is the first step, that is, you build a support system that is going to introduce and facilitate change.

Scriven: The more details the better. Probably the more levels of the hierarchy we bring in the better.

Pribram: Another rule is that change is going to take time. There is going to be a lot of stress, even from that higher system on the little system, and they had better be prepared for it.

Scriven: Then we have to be prepared to handle a lot of stress thoroughly. All estimates of the time required should be regarded as human fallibilities and doubled and probably be doubled again.

Wilk: I agree wholeheartedly with what Scriven is saying but I wonder if before we make a list we could at least identify in terms of the system some of the factors that we must analyze before we come up with a strategy for change. Too, we have to start by analyzing the situation.

Scriven: That is an attempt to provide a complete sociological theory, or something like it, and it is too grand an enterprise. What we have so far is a lot of illumination on a lot of cases and it is about as far as we are going to be able to go without writing a book on the sociology of change.

Backman: I think you can start with certain kinds of questions. Whose outcomes are going to be changed by what you plan to do? Start with that and then work out. The potent people that are closest are the people who are going to put up the fuss when you start changing.

Scriven: Let us try to get a general picture. As I understand the matter, our task here is not principally to get a general theory of change, but to get two particular things: Implementation procedures, such as what we can elicit from psychologists whenever schools seek to get into an innovative phase, for example, and a list of procedures that are associated with the first. Included in the second would be the defining of other roles by psychologists in the light of educational needs and, in particular, how we can produce such educational psychologists in the future. So the major payoffs are first, change procedures or a check list of warning signals, or procedures to go through if you are interested in change, which is a piece of educational psychology of particular importance to all of us. Second, ultimately we must come to grips with the question of what is it going to take to produce an educational psychologist of the kind we want and a teacher of the kind we want?

Balow: I am amazed at how easily and rapidly we neglected Reynold's' question on changing our own operations, which seems to me to be much closer to home and perhaps more within our control than Scriven's suggestion.

Chairman: Let me take the responsibility for the neglect. I guess I am more interested right now in trying to take a look at the process of change than in asking embarrassing questions about why we don't change at home. It is an important question but I chose to focus away from it.

Lindsley: I am terribly interested in change because I am heavily involved in it. But the search for instant change is unreal because we do not know what is healthy growth.

Chairman: As psychologists, it seems to me that we ought to know something about how rapidly an organism can change without destroying itself. You would have to know something about the stability that an organism has.

Reynolds: I have the feeling that psychology in the schools is in a mess. And one of the reasons that schools are in a sorry state is because psychology made them so. We have talked a lot about testing and measurements, which we admit we cannot justify, and about the horrors of classifying, sorting, and labeling, yet, more than any other professionals who had had access to the schools, the psychologists were responsible for introducing them. I think we ought to be humble, at least in the face of all the uncertainties of the moment. We have to be concerned and should try to be sophisticated about change, and we ought to try to be helpful in the ways we can. But people are concerned with change all over. In the meantime, we here have not made up our minds about, for example, the kinds of things that Kohlberg talked about, or what contributions we can make to specify goals for the schools. I am not at all satisfied about a good many of the issues that Backman raised with respect to sociological aspects of the school. I find it a little bit of poor taste almost that we come on like big change agents. We have to start by becoming terribly introspective, and we have to start introspecting about our own houses.

Chairman: Let me tell you how I am trying to keep our discussion organized. First, I assume that before we can do very much in-house change, we must have some notion of how change occurs in a general sense. Second, I assume that the purpose of our agenda in this Conference is to cause us to take a look at the in-house situations, and to talk about changes that we are ready to make and the ways we are going to make them. I see that as part of the agenda we have not met.

Birch: Not very long ago, I completed a formal part of a three-year project that was specifically aimed at bringing about a very substantial change in a school system in northwestern Pennsylvania. The change called for the school system to make a big new move—to take a look at all the children in that system who had been admitted two years before the usual admission time and to study them rather carefully and to make some decisions about various kinds of admission preparations. At the time I started the study, I knew nothing at all about change as a process so, before I embarked, I tried to inform myself on what was known about changes and about changes in schools specifically. As a matter of fact, the paradigm I used for effecting the planning and the change itself in my study was one developed by a Teachers' College professor. His was a very well-developed empirical conception of how change is brought about, and it was based on a group of case studies. It is pretty evident that I am out of date because of how far back in the literature I have to go to cite what has been said. Perhaps hardly anyone else here has much knowledge of the existing literature on change in the schools. But I do know that the literature is substantial and that it has been added to over the years.

Thus, it seems to me that we have reached a consensus on the idea that psychologists who are going to operate in the schools (a) ought to learn as much as is known about the change process; (b) we do not have to spend time right now developing strategies for change because we really ought to see what is already known about it; and (c) if we can conclude that one of the things we want psychologists to take a look at and learn about is the process of change and how to implement it, then we can move on to thinking of some other things in which psychologists ought to become interested. Maybe we are through talking about change for the purpose of this particular Conference.

Pribram: I do not complete agree with Dr. Birch. In any homeostatic models, odd things can happen. The question is, how do we get these odd things to happen in a lawful way? Now, as a biologist, let me say that there is one simple way in which nature speeds up your two-fold change—sex. That is, when you mate one system to an entirely different one, you produce change in a much more rapid fashion. Obviously, you take some risks in doing so. The first change of that sort that I think is happening right now is the whole problem of educating disadvantaged students and the marriage of the disadvantaged and the advantaged in the same institution. That is a huge sexual type of first, separation through differentiation, and then a marriage by bringing them together; in itself, that is already producing fantastic changes in the school system.

The second thing that I see is the engineering problem—computers. Today, cheap computers are down to $5,000; in another 10 years, the prices will go lower as our techniques for improving and manufacturing them are refined. When you take that engineering technology and put it together with school technology, again, you are going to have a new marriage that I think will produce changes. Of course, you cannot predict what changes are going to occur exactly but there will be changes and they will be rather dramatic. Meanwhile you have all the problems of a mating situation, including divorce.

Scriven: I want to get back to the worries of Reynolds and Balow about our lack of courage in changing ourselves. Any strategy of change applies to us, too. We are the one agency over which we have immediate, guaranteed, conscious control. In the last seven years, I have been on the board of directors of the outfit that has tried with Office of Education and NSF support to bring change to social studies in the school system. In the couse of our work, we have tried every theory of change that we could find, we have made up a large number of theories, and we have called in every consultant that we heard of or ran into. I can go through my little list of horror stories but they add nothing to Smith's, which is a story to end all horror stories. I do not think we are gaining a lot by adding more anecdotal studies because, in the last four years, I have seen nothing new come out except a group of people who are awfully sharp in approaching a new school system when they are consulted. I think we are at the point where we want to start listing whatever we can propositionalize. That will give us rules like "The child knows best," and "Talk to everybody who is going to be affected"; they will not do the trick, but we need them to clarify our ideas.

We must not think of conceptualizing guiding rules as doing the job. But if we are thinking of training psychologists or teachers for the school system, we must get clear that in this business there is not a set of rules. You can put in as many quantified variables as you like, but it will just be more of a bore; you can cut them out but then it will contain less of the experience. It is important to realize the limitations of the slogan checklist items; nevertheless you do not throw them away. They are what the headings in books by Arnold Palmer are for golfers. They are important focussing points around which the skilled trainer can concentrate his advice, and they serve as crucial mnemonics for the man who has learned the skill. Writing down any of these things is not going to get you into a school to make big changes. One thinks up one's own mistakes in interpreting any check list.

I think we must radicalize the training procedures. We are in a field that is being modeled on the epistomology of classical physics and chemistry but we are in the business of practical engineering. When you get down to designing automatic engines, you do not do it from formulae, because there aren't any. The great innovations have been made by very bright men with massive experience, yet they could not transfer any of it by writing books. We have to face that, which means the dirty approach to teaching the teachers and the educational psychologists, throwing them in the water and letting them swim one way or another; then when they get to the point where they scream for the lifesaver, you can throw them what you have. And at that stage they will not complain because it isn't perfect.

Blocher: Our system has changed for the first time since we came here. I agree with Scriven completely!

Institutional Reports

Chairman: I hope that the reports this morning will be a means of clarifying the products of this Conference. What have we learned from the papers, presentations, and discussions of the past two days that can make our university and college training programs more relevant to the urgent needs of our schools and the children they serve? That is not an easy question to answer at this point in time, I know, when we are still so close to the ferments of agreement and disagreement, but perhaps the reports from the different institutions will provide the springboard. We will hear first from the Pittsburgh group.

Gladis: We have been thinking about, among other things, the setting up of a program in which we could develop a new type of person to work in schools, a person we would call an "instructional psychologist." Our ideas on this program are tentative, you must understand, and not formalized in any way.

In the *1969 Annual Review of Psychology,* Bob Gagne and William Rohwer wrote a chapter called "Instructional Psychology." According to their definition, instructional psychology is any learning that can be applied to the classroom setting, which seems to me to be inadequate. Bob Glaser and Lauren Resnick of the University of Pittsburgh are preparing another review of this topic for the 1972 volume. Since I had some contact with them, I asked them for their definition of the term. They said they had not been able to come up with a satisfactory one. Consequently, the best way I can define instructional psychology is by describing it, that is, by indicating the kinds of competencies we would expect an instructional psychologist to have.

1. One of the overriding emphases of the program that we are considering is to train people who will be concerned with schools and concerned with making them a more humane and joyful place. They would be both educators and psychologists. To help them become such, we would give them training in the foundations of both education and psychology. Such courses would be the formal aspect of the training program.

The second aspect would focus on the question, "What makes these people different from traditional school psychologists?"

2. At the University of Pittsburgh, we have a number of individuals working in what we consider to be one area of instructional psychology. The Learning Research and Development Center (LRDC) has an ongoing program in the public schools called IPI (Individualized Prescribed Instruction) in which teachers, educational researchers, and, to some extent, psychologists have been engaged in developing instructional materials for elementary grades. This program has been in operation for over five years. In attempts to evaluate the program they have run into the same problem as Lindsley, that is, they

receive so much data that it is very difficult to analyze it. One option is to program the whole process on a computer so that the child, the teacher, and the researchers would get more immediate feedback on what is happening. This is one example of the type of activities that our students might get involved in.

Other types of training would include course work and practicum in behavioral management of classrooms, computer-assisted instruction, curriculum development as suggested by Gagne, that is, the development of curricula in terms of learning hierarchies. In addition, we would want these people to have experience in other kinds of innovative instructional procedures such as open classrooms and discovery learning.

3. A novel—what we think of as novel—part of the program would be the relation to the schools. From the first day the student enters the program, he would also go into the schools so that he knows what goes on there. In fact, one of our members suggested that the student's first experience should be teaching in a school so that he starts with a base of feeling what it is to try to teach children in a classroom.

Thus, in addition to course work and some experience with the various types of instruction, we would have built-in practicums of various sorts. We are thinking not of having these people scattered all over the state, but of clustering them so that we would have, say, 15 students working in one school with a faculty member out there all the time to help out. Hopefully, this arrangement would work out better than having the students scattered over the area with no interactions among them or with no close faculty supervision.

In addition to the practicum, each student would have a one-year internship in the schools. Through the practicum and teaching experiences, the students should get a good knowledge of what goes on in the schools.

4. The University of Pittsburgh is an urban institution and, as such, is committed to help ameliorate some of the urban problems. Our emphasis, therefore, would be on the training of instructional school psychologists for urban settings. We would not expect that everyone going through the program would work in cities, but that would be our emphasis. A legitimate question at this point is on the implementation: Where will these people get jobs? In our group, we are fortunate in having two members of the Pennsylvania Department of Education and a member of the Pittsburgh Board of Education who have indicated that they would like to see a new type of person like our instructional psychologist in the schools.

There will be incorporated in our program, although I cannot give the specifics of how at this point, concepts and approaches that spring directly from this Conference. As the result of Kohlberg's influence, we have a heightened awareness of the importance of a humanistic orientation in the training of professional people in education and, consequently, a resurgence of interest in moral education. We will stress the concept that all children have strengths and that our school psychologists should focus on these strengths. Emphasis will be placed on affective as well as cognitive factors.

The importance of the humanistic-holistic approach to education has been reinforced by Gattegno, and especially by his notion of teaching as basically the teaching of awareness. Thus, in our training program, we will look for candidates who have the potential to become sensitive, responsive individuals, to use their skills in their work with teachers, and to communicate clearly and effectively with educators on all levels. Since many of our students will be from minority groups, Long's discussion of the importance of personal experience in their lives was very meaningful to us. I believe that we should be more sensitive to the strengths and potentials of such applicants aside from the usual requirements for entrance into graduate school. Furthermore, I strongly believe that we must become much more concerned about making education relevant for individuals whose life experiences differ from our own.

We are interested in exploring the notion put forth by Backman that we should utilize more the use of group-reward systems in the classroom rather than strictly relying on the traditional individual-competition approach. This concept seems to offer a way of implementing to some extent the humanistic-holistic concepts of Kohlberg and Gattegno, but we need to know more about its implications. For instance, how does it fit in with Lindsley's behavioral management approach which is an integral part of our program? Lindsley gave us new ideas about behavioral management with his use of charts rather than tokens as reinforcement.

In addition, our training program will reflect in many ways other concepts that have been aired here. Scriven's statement that the method is in the textbook but the content is in the field delineates for us an important relation between course work and practical experience. And somehow, we must build into our program an attitude toward and competency for change that our students can carry into the schools. In the face of Sarason's pessimism and Smith's horror story, I feel that this task must be approached with a great deal of humility.

I would like to know the reactions of this group to our proposal. I would like also to ask this group to address itself to an issue that we have neglected so far, minority groups. What can psychology do to eradicate social and educational injustices?

Sarason: In my paper, I wrote of having teachers spend a year in the schools in a variety of ways before they are exposed to educational concepts and ideas. Had I discussed the paper, one of the points I would have made was that it is an equally good model for psychologists. You talked about starting students in the schools the day they entered the program. What is the objection to plunging them into the school culture in diverse ways before they even take a course?

Gladis: I have no objections. I just don't know which is the better approach. I have no data.

Bennett: What is wrong with a compromise? Let me refer you to the *American Psychologist*, in which Jack Bardon and I* described a comparable program. We plunge our school-psychology students into the schools on literally the first day they appear on campus, and apparently this practice has been effective in helping them to understand some of the complexities of the schools. During the first year of their graduate training, students spend approximately two days a week in the schools. Our rationale is that actual experience integrated with didactic coursework makes their basic coursework immediately applicable as well as meaningful. We encourage students to use assignments to write term papers for courses that are explorations and identification of real school problems. We encourage them to begin using their statistics to analyze "live" data. We are constantly experimenting with our program, and do not know at this point what is the ideal balance between course work and experience. Perhaps two days a week in the school is not sufficient. In any event, the immediate integration of course work with experience is a far more sensible approach than the traditional approach to training psychologists (three years at the University, then the internship).

As Gladis suggested, we assigned (at first) all the students to one school system (just recently we have extended to using two nearby systems, to include experience in inner-city, minority-group populated schools). By keeping students in the same system for the three years of their training and then providing a different setting in the fourth-year internship, we hope our students' impact on the school system will be more effective. Each year they function in the same school but in different ways, as their background and training increases.

Since the article appeared in the *American Psychologist*, we have experimented with providing students more sophisticated (from the psychological point of view) experience earlier in the program. The first year is still devoted to getting to know how schools operate and getting to know the flavor of this unique social system of administrators specialists, teachers, pupils, and its peripheral but impinging social system of parents and community. Originally, our practicum experiences (which included parent consultation, working with teachers, and operating as a "change agent") were reserved for third-year students; now we have Practicum I in the second year, and an Advanced Practicum the third year.

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* Bardon, J. I., & Bennett, V. C. Preparation for professional psychology: An example from a school psychology training program. *American Psychologist*, 1967, 22, 652-56.

Chairman: The next question on the agenda centers on the problems of minority groups but they will be discussed, I hope, in the context of the agendas that have been developed by the institutional representatives. We will hear from the Southern Group now.

Allman: After some introspection, it seems that we need to try to develop good psychology departments. The fact that our courses are limited and not too well coordinated, indicates that we are deprived in the area of psychology. The courses are teacher oriented. At Alabama State University, 90 percent of our graduates go into teaching.

Listening to your discussions as professional psychologists, I found myself hoping that some of you could visit us in a workshop or seminar or that we could send interested students to you. In this way, we might get more stimulation and incentive to grow.

Hypothetically, we would like to propose the establishment of a school of psychology and/or of educational psychology, or perhaps just a center, to which students from Tuskegee, Miles, Alabama State University, and other institutions could come to receive instruction from professors of psychology and professional psychologists of your caliber. If you would come down and share your expertise with us, we would, in all probability, produce or develop the kind of personnel capable of serving the psychological needs of the area.

Wall: We have a tradition for such cooperative efforts that I will tell you about. First, let me say that it is true that many of the black institutions—certainly those represented at this Conference—are in need of both physical and technical resources. These institutions are also located in a region that itself is lacking in these same areas. For example, I have heard us talk about school psychologists, school social workers, and other educational specialists, but these are personnel resources that are almost nonexistent in the southern region in public education.

Last evening, those of us representing predominantly Black (southern) institutions, looked at our existing structures to see how and where some of the concepts and program ideas that have been presented and discussed here could be incorporated into some of these educational structures. We identified several starting points for cooperative educational planning and program modification.

1. The Jefferson County School Board in Birmingham, the University of Alabama, and Miles College have effected an experimental teacher-education training program that is funded by the U.S. Office of Education. About 50 freshmen in the School of Education spend three days a week in the classroom either at Miles College or the University of Alabama. Two days a week are spent in public schools in

Jefferson County. The students are paid about $50 a week. The students are committed to a career of teaching and Jefferson County School Board is committed to hiring them upon graduation.

The idea has many possibilities, not the least of which is the notion of hiring groups of teachers who have been trained together and have developed group supports. These groups or cadres of teachers have a greater potential for effective change within a given school system because of these built-in group supports achieved during training.

2. We have the Alabama Center for Higher Education (ACHE), a consortium of small Black institutions in Alabama working together to strengthen their complementary areas of specialization. Working through ACHE, we from Alabama can ask that this group give the training of teachers and educational specialists a position of high priority in their future considerations of programs to be broadened and upgraded.

3. At Tuskegee, we have the Human Resource Development Center that offers a varied program of continuing education. It would be in line with the program goals of the Center to sponsor conferences on the same order as this one, on a regional basis. Students, inservice teachers, administrators, and community leaders could be invited to sit together to identify critical educational needs and ways of meeting them through cooperative efforts.

The point is that we have structures for implementing change. What we need is specialized staff resources that would be available to follow through on program development.

I have been concerned about the drop in enrollment in schools of education. At Tuskegee, the School of Education was at one time the largest degree-granting unit on campus; it is now among the smallest. I will not try to explain all the reasons for this drop. However, one reason stands out: Students are concerned with the development of self, with social change, and how and where they fit in the total scheme of things. Both psychology and education could be made more relevant to these deeply-felt student concerns. One way we might attract more students into the field of education is to redesign our teacher education curricula and program emphases. A career in teaching and an interest in social change need not be mutually exclusive. Perhaps we could offer students alternative ways of discovering self beyond sheer introspection. Teacher-training programs could offer students the opportunity to become involved in activities that contribute to the definition of self through their functional relations to broader social issues.

We need a new image of the teacher—one that is clearly marked out—toward which students can move and gauge their progress along the way. In response to the recent student demands for educational reforms, particularly in the area of curriculum, many institutions have floundered in setting up definitive, teacher-training program goals. This confused state of existence was inevitable perhaps, but was confusing to students and faculty alike. We seem to be at a point in time now where we can consolidate the insights we have gained from the past few hectic years and define a new direction and stick with it a while.

This Conference has highlighted at least two elements that should be part of any new teacher-training program: cognitive development and a concept of teaching as involving multiple roles. In the field, teachers seem to be more aware of Freud than of Piaget. Individual psychology tends to outweigh social psychology in spite of the fact that the classroom group is still the most obvious element in the organization of the school.

If you were to look at the predominantly Black institutions, you would find that many of the private ones have some sort of cooperative relation with a larger, northern white institution. Tuskegee is intimately involved with the University of Michigan and Stillman with Indiana, and these relations should not be minimized. However, we need more than periodic or short-term personnel exchanges. The Black colleges in the rural South face continuously the problem of recruiting competent faculty to live and work in the region.

Lindsley: I see in the South an opportunity to train a new kind of school psychologist. Put the program into a system where it will not have to be involved too much with the retraining of old kinds of school psychologists. You can think of a new type of program and institute it there because you have the control group. If we get from this Conference a new concept of or role—such as instructional psychologist—for school psychologists, one of the most important places to try it out is one where it will not compete with a big group of already trained practitioners.

Blocher: There may be other factors, however, that make the situation unexpectedly difficult. I think that the notion is not viable. Any new program must be tried in places where it can be instituted and facilitated as well as in those places where it might be difficult.

Scriven: Supposing instructional psychologists were a fact and the southern people had a choice between an instructional psychologist and a psychometrist to help their teachers diagnose classroom problems, are they so enlightened that they think they can junk the latter role? Does it not seem a role of some value to their teachers?

Birch: We have a lot of experience with so-called psychometrists and they do not help teachers to diagnose.

Scriven: Two quite different questions are involved. Perhaps psychometrists should not diagnose; perhaps in the past they have not done it usefully. But there is another type of new psychologist that might be able to do it. It is a fact that some of the teachers in the South, like some of ours, need to differentiate lack of capacity from lack of effort, and surely it is not too much to call on the entire science of psychology to try to find a way of differentiating without labeling everyone as having a low IQ. I am asking the question in relation to the organization of needs because when a little money becomes available, and I think that that would not be too difficult, the southern people will need to know what they want to spend it on.

Lindsley: I like the idea of seeing Stillman and Taladega, for example, training their own people. Pick people who are right there and send in the training techniques to them. We have not done that kind of thing in this country very much.

Hall: They could train as instructional psychologists their own people who are bright teachers and who are experienced in the local situations.

Allman: Are there bright teachers in the public southern colleges who could be trained as instructional psychologists? I think so.

Chairman: It is time to shift to the Arizona Group.

Heimann: We are probably plugging into a little different slot than the earlier institutional representatives for several reasons. Some of the things said last night are particularly germane to our concerns, that is, the changing of an institutional training program. I am talking specifically about our counselor-education program at Arizona State University. I just happen to have in the bag that I brought along to the Conference a complete change of curriculum and a completely different approach to counselor education. Taking it as a case example, we began to develop a dialog and discussion among ourselves around it. I would like to lay it out for this Conference.

First, let me state a couple of givens.

1. In Arizona, we do not have school psychologists to any great extent, just a very small number. I am talking about a counselor, a person who fills the role of school psychologist in many other parts of the country. He is a sort of jack-of-all-trades. And I am talking about training counselors for the southwest part of the country.

2. As a department, we have been pretty well commited for the last couple of years to paying attention to the problems of training counselors from minority groups and counselors who will deal with minority-group people, particularly the Chicano group. Although we are graduating three Black people from our Ph.D. program this year, there is only one Chicano receiving the degree. We probably have more blacks in our program than Chicanos, and we are feeling the situation because of our geographic location. Therefore, we want to make some special efforts in the other direction. I suspect that that is what we are going to be doing in the next year or two.

3. Another thing to understand, before I get into the program itself, is that we have essentially a two-year training program to pro-

duce school counselors. It is a Master of Counselor degree, a professional degree, and it is pretty new. We expect to have about 100 full-time day students in this program next year, most of whom have been teachers. Some have been recruited because they are Chicanos. Trained as teachers, they have had experience as such and now are coming back for retraining as counselors. Not all have had this experience and not all are aiming at school positions when they finish. Some are aiming at perhaps clinics, hospitals, or agencies of one sort or another. But the bulk of the program is still within the College of Education.

Those are some of the givens.

We have come up very recently with a rather—for us—major effort at changing the institutional pattern of training this sort of person. When we tried to change ourselves, we utilized some of the things we know about change, and ignored some of the other things that we should know. I am speaking as one member of a 17-man department. Our major motivation, I think, was to integrate within the department the essential parts of our training program both at the Masters' and doctoral level. We are devising patterns—those who have been in education 20 to 30 years will recognize them—that are new for us, that is, a team approach, a block teaching-team approach where we wipe out courses and institute a curricular program that will involve five groups of 20 or 25 students. They will be team taught by a faculty person, a couple of doctoral internes who may or may not be members of minority groups, and several imported doctoral students who are either Chicanos or from school communities with large Chicano enrollments. These people will come into our doctoral program and tie in with the teaching teams for the several years they are in residence. The teaching-team concept is the central core of the program; it is like the old core curriculum that we used to talk about 25 years ago, and the core of it is the practicum, both in the University training center, where you can control a lot of the conditions, and out in the field. A core of seminars will focus on the culture of poverty, particularly the Chicano aspects of it, and a core will center on the social psychology of change. Into this central core we would provide experiences lasting two weeks, five weeks, three weeks, or a day at a time, of the more traditional aspects of counselor education, such as occupational information, psychological testing, interviewing techniques, group procedures, or whatever things are essentially part of a training program. But we will vary these materials in terms of length of time and intensity as well as in the persons brought in to teach them. They may not all be members of the counselor education faculty; we may use anthropologists, social psychologists, secondary-education people, high-school principals, or community representatives. We have not worked out all the details, obviously, but we are thinking in terms of a variable pattern of instruction around an experiential core of doing some of the things that we are talking about.

One of the things that came out in our discussion this morning was the realization that we had conceptualized the program as operating in an ivory tower. We had not involved our colleagues as this morning, Haggerson, from our Secondary Education Department, became involved; and although we had talked about the consumer, we had not involved Kaslo, who hires our people in his high school; nor had we talked about the community and the sort of contributions that people like Pastor could make in helping us to sensitize the program to what a Chicano wants and expects. These are some of the things that I hope to bring back to my colleagues.

I think the project will be vastly enriched by some of the things that we have picked up already from the Conference and I hope to carry them back to jog my colleagues a little bit. One of the things we are taking back with us for our program is the slogan, "Maximize the internal ecology of the child, but up the left side." Another is the concept of expanding our cognitive maps, which is probably the more crucial. Still another is the concept of change.

We interpreted the latter concept to mean that if you are going to change anything, you start with yourself, both at the personal and institutional, organizational level. The modeling impact of a department making a major change really says a lot more to its students and its clientele than maybe developing a lot of learned papers on the process of social change. Watching and assisting our department go through a major reorganization and a major curricular change, indeed, a major change in approach to the whole process of integrating psychological models of learning in educational meetings, has had a great impact on our students and clientele.

Chairman: Dr. Wilk, will you take over for the University of Minnesota?

Wilk: Chuck Austad of Bemidji and Jerry Haukebo of Moorhead, both of the state college system of Minnesota, are here largely because, with the University of Minnesota, they are cooperatively engaged in the training of educational personnel. We are proving that it is possible to find ways of utilizing the comparative resources of institutions to conduct such efforts. The rationale for our involvement at the University of Minnesota is to facilitate the development of these state colleges that serve the rural, sparsely-populated region of northwestern Minnesota, an under-enriched area of the country. One of the things that this Conference might want to take as one of its propositions is the support for such cooperative relations.

I think that where we are at the moment can be subsumed under three headings, first, what may be called some propositional statements, second, the decisions that we have made, and third, what we see as the next steps.

In Minnesota, the preparation of school personnel goes on in four largely autonomous institutional systems now, the public schools, the junior colleges, the state colleges, and the University, which are locally coordinated by the Higher Education Coordinating Commission. (Technically, it is not correct to call the University a system.) Each system has complementary resources and strengths that it brings to bear; each has changes under way to improve educational opportunities; and each can utilize the resources of others to facilitate change. The institutions can provide complementarily supporting roles for one another. Cooperative endeavors have a higher subjective probability of success when they do not work in an integrated way on the problems that are fostered in any one system. That is a proposition if not a hypothesis. We are suggesting that a broad program or range of educational opportunities is more likely to be responsive to community requirements than any more restricted program. The preparation of practitioners ought to be rooted in the sites of the educational program, utilizing a sequence of training enactments that are developed to integrate the elements of the professional training in what might be called the sequence of successive approximations designed to develop the desired competence.

We made a decision—at least, a temporary one—that we would begin with the assumption that an appropriate context for the three institutions' involvements would be in the field of teacher education. We have explored broadly ways in which the public schools, University, and state colleges might target on the problems of teacher education in such a way that the resources of the three institutions could be utilized and the institutions themselves might be changed.

What steps do we now need to take? At least four occur to me. (a) What are the community interests and how do they lead to the structure of the program and influence its development? The answers to the question might be considered the elements of a plan for a plan, if you will. (b) What program content do we need? What subject-matter components should be included and how would they be utilized? (c) What are the physical and fiscal resources and how can they be drawn upon and utilized? (d) What are the procedures needed in the development of a plan for a plan? That is to say, how would we co-opt the three institutions? We recognize that, even in the development of such a cooperative endeavor where the target is rather neutral and where people are brought together to be trained in new ways for the schools, there is a re-entry problem for the people back into their systems. At this moment, we have recognized the re-entry problem but we have not specified it in detail. We have begun in a systematic way to attack the questions and by the time we leave we ought to have a plan for involving the four institutional systems in planning for the target approach.

We have a commitment to bring the four institutions together and to work from that point through the development of individual programs. What we then want to do is to find some way of increasing the vitality of the three programs through a marriage, so to speak.

Young: As I see it, there are at least two kinds of re-entry problems: the trainee as he goes back to his college and, assuming that he survives and comes out ready to change the world, then his re-entry into the public-school system. Perhaps in the selection of program participants, psychology could tell us a great deal about the personality traits such a person should have in order to be able to survive and maintain his vigor and beliefs without being crushed by us.

Hall: In addition, we are concerned with two juvenile populations, the childhood education one and a group of adolescents who would become part of our paraprofessional training group. Thus, actually, we are looking at two in-school or out-of-school groups as well as at the whole array of training groups.

Wilk: My statement was a general one but it can be particularized. In the St. Paul schools, programs are at least emerging, if not under way, that are concerned with early childhood problems, with utilizing people with an interest in the high-school population, with differentiation staffing in the school system, and with the separation of teachers and various professional workers in the higher education institutions. Our aim is somehow to create an integrated approach to such programs from the points of view of the four institutions. I did not want to, although they are quite worthy of it, single out St. Paul because there are other locations within the state where the institutional systems might come together, such as near Bemidji, where programs have been started on the Red Lake Indian Reservation, and in Moorhead, where other kinds of things have been started. We are trying to do some planning at the general level that can be made specific in a specific project but has some generalizable elements for the four systems to work together.

Bennett: The Minnesota report underlines the need to gather information on the previous work that has been done along such lines. Our training goal is school psychology, not teacher education. Until 1966, the Rutgers training program was the only school psychology training program in New Jersey and, because of legislation mandating psychological services in the schools, there was a dire need for more school psychologists in the state than we had facilities to train adequately. Rutgers initiated the formation of an Inter-College Council on School Psychology Training, inviting all institutions in New Jersey to participate that were interested in offering school psychology training. Of this group of 14 colleges and universities, two state colleges and one parochial university were extremely interested in and working toward developing the facilities and faculties necessary to offer beyond-the-Master's level training in psychology. Rutgers, with these three other institutions, formed a Consortium; and Rutgers received federal funding to support a joint training program. We shared students, faculty, colloquia offerings, classes, and facilities. Getting this joint program to work was, obviously, fraught with all kinds of problems. However, we now have three other school psychology training programs in New Jersey.

Wilk: In our mutual idyllic reveries, I think we spared ourselves these problems. We know that they are going to come but we want not to be unduly constrained by them initially. We are optimistic. One of the things I should have added is that we are talking about an integrated program for the training of educational personnel in various roles and specialities. Out of our own experiences, we are concerned that educational personnel are trained in virtual isolation from one another, that there is too little interaction among school psychologists, school counselors, elementary teachers, and the like. What we are talking about at the moment is not a single training program over a geographic area, but putting together the various educational personnel roles in a training site.

Q.: What does your training project have to do with utilizing psychology in the schools?

Wilk: I guess everything. I do not necessarily have a model of how the discipline of psychology in its various parts gets integrated in the training program except to say that if you put people with training in the discipline of psychology and an interest in education as a field of application, in a training site, and if you have an idea of how training might proceed in sequences of events to combine the various kinds of educational experiences, psychology and education will interact with each other.

Chairman: I think a good example of what Wilk means is exemplified by Lindsley's concern for placing himself in a department of curriculum. He sees it as a viable way for everything he knows about psychology to infiltrate the schools.

Wilk: In some sense, what is more interesting to me now is the dispersion of what we thought of as an educational psychologist into the various functions that go on in schools. That is to say, there must be an educational psychologist of kinds involved in the development of subject-matter sequences in cooperation with subject-matter specialists. The educational psychologist is in the teaching endeavor in many ways, if you define teaching as the activity that engages students with subject matter. The educational psychologist has another role in creating the social structure through which teaching takes place. He has a community-psychologist role in engaging the clientele to come in and partake of the teaching. Part of what we think we need to develop is an understanding of how the discipline of psychology gets practised on this site. You bring the various elements together and design a training program that has elements of the practising role in it. You might use a training model that could be described as one of successive approximations for arriving at where you want to go. Maybe that is more of an industrial training model but it is one of the possible training models.

Hall: May I ask a question? Are our chief goals to come out with four geographical area projects or are we really representatives of a larger national program? If we are going to work the major part of today on local projects, important as they are, I think we do not approach what seems to me to be, probably, the key question that has been asked: How do we provide more justice in American education?

Reynolds: The idea was not for a cluster of people to come in from Arizona or Minnesota and design a proposal that it will submit to the Office of Education for funding. There were very significant reasons for involving the particular clusters that were invited but the main idea is for them to come up with ideas and concerns that would be representative of many other institutions. Indeed, a little farther back in my mind was the thought that maybe some of these cluster centers, if I may refer to them as such, would be willing to engage themselves in a kind of follow-up activity that might involve some other institutions. What I would hope to see is not so much the details of what is going to be done at a particular university, but to see ideas about what that new psychological specialist might be in terms of functions, exciting ideas that would be carried into specific plans and would be very stimulating and useful to other teaching personnel.

Lindsley: It seems to me that the general purpose is more like instructions to the U.S. Office of Education on changes that they could make very soon if the kinds of things we think important are going to get done: suggestions of where to put money, how to revise granting structures, how to store and dispense information, how to use resource personnel like Gattegno, Pribram, and me. Can they do these things through existing types of support structures or should there be other ones? Should more conferences like this one be held? It seems to me that that would be the way you would address yourself to the general question. You say, "Here are the things we would like to do. What changes will have to be made in the federal, state, or university scene to bring them about?"

Reynolds: Let me tell you another possibility that I would be quite interested in. We have talked quite a bit about the immersion of students early in their graduate programs—Pittsburgh proposed immersing them in the schools—but we have not gone beyond that point. In the schools for what? It seems to me that it would be very interesting to go back and address the issues that were raised by Kohlberg and Lindsley. Are you going to teach these students to do the kind of thing that Lindsley does? What are they going to do in the schools? Are they going to be prepared to teach? To take classrooms for periods of time? Are they going to operate in a special little office and be consultants? How are you going to deal with Gattegno's kind of teaching? What impact would these students hopefully have on some of the things that Backman was talking about, the use of measurement and grouping techniques? I would be very much interested in hearing more detail about what it is you are going to have those people doing when they get immersed in that school situation and that, I think, must bring us back to the address of other kinds of problems that have been raised here over the past few days.

Q.: I concur with Reynolds. Unfortunately, I was not able to read the papers before I came. I have heard theoretical notions being presented and the presentations of certain kinds of ideas for the classroom and certain kinds of conceptual formulations for curriculum. All these were presented as if we were addressing a kind of universal population of children. I know that this population is not universal in the sense that there are very different cultural groups represented in it. I have the feeling that so far we have been talking in broad, general terms without any recognition that we are not talking about a heterogeneous group of children.

Lindsley: That question is important to me. Of our seven or eight thousand projects in the computer, over three thousand are reading and mathematics progress charts, self-charted by black children in the inner city, tutored by slightly older black children with four hours of training. Maybe these projects have something to do with instruction in Alabama, maybe they are just relevant to Kansas City. Are the differences between Kansas City and Birmingham so great that the children in each place have to be taught slightly differently?

Q.: I was wondering about something like that in terms of curriculum. I heard about languages and so forth but I want to know something about what the child is reading: Is it related to him, to his world as it is, as it possibly might be in terms of potentials? Does it recognize his existence as a different being? I am saying something similar to, I don't want any color blindness.

Pribram: I think that disadvantaged and black children are no different from geniuses. They need special attention, too. Every child is different from every other one and every child is going to bring his own thing into a classroom. What we were talking about are the ways to gauge the differences in the children. Gattegno certainly had things that would be addressed to each individual child. And I have too. A language is a language; you can't teach a language unless you can communicate with a child.

Wilk: One of my expectations, I don't know whether it meets yours or not, is that as a practitioner I have the responsibility of interpreting what theorists say and to think about utilizing their notions in programs to build training practitioners. I am not going to expect Pribram to be interested in how the notion of a metalanguage or a language of languages gets involved in the building of training programs for school personnel. I am terribly glad that he has his neurological laboratory at Stanford and that he generates the kind of ideas he does.

Chairman: We will continue this afternoon.

Questions and Answers

Chairman: I would like to suggest that for this afternoon we shift gears considerably and take some time to find out what questions have not been raised in the group. If I can elicit from you some of the questions you have about the whole process or bag of psychology in the schools, I will list them on the blackboard and then we will decide as a group which ones we want to spend time discussing.

[Eleven questions were proposed. The Chairman estimated time would permit the discussion of only four, consequently he asked the conferees to each vote for the four that were of most interest. Questions 11, 4, 7, and 9 received the greatest number of votes. All the questions and their respective votes follow:

1. Will hardware make the psychologist irrelevant to instruction? (2)
2. What are the characteristics of an instructional system based on the best psychological knowledge available? (9)
3. Are there psychological propositional statements useful in teaching? (7)
4. How do we work ourselves out of the prediction-expectation-capacity bag? (14)
5. Can developmental psychology specify the aims of education? (9)
6. Is the language goal related to thinking as a goal? (11)
7. Does it make any difference why a learner does not learn? (15)
8. How do we use the negative bias of schools and psychology in the schools in order to change the schools or to change psychologists? (2)
9. What is an optimal strategy for influencing a system? (12)
10. Are there or should there be contemporary teaching procedures derived from psychological theory? (2)
11. How can you provide for differences in education without stigma? (18)]

QUESTION I

How Do We Work Ourselves Out Of The Prediction-Expectation-Capacity Bag?

Reynolds: When is a prediction about a child reasonable and how does one avoid the problem of setting expectations for him? Too often, when a prediction is made for a child, certain expectations are created and, when he does not meet them, extraneous variables are generated to explain the failure. The child may be labeled an underachiever, defective, or remedial case. In my work, I am oriented toward decision making more than to predictions and I am not willing to throw away all the measurement devices I have.

To me, stigma in education is tied up with prediction, expectation, and capacity. I see the problem as going at least all the way back to Thorndike and the development of broad-band tests like general intelligence. With these tests, we stopped grading children in relation to one another; instead, we developed the practice of using the broad-band variables to make predictions about youngsters in particular situations. And we started making assumptions—illogically—that children falling in a certain segment of the distribution curve of these test scores would not do well in elementary school and should, therefore, be placed in special classes.

Psychologists measure some broad-band variable in a child and, after they compare it with his achievement scores they make the amount they are off in their prediction a characteristic of the child, that is, they label him. They should not, but they do, make general predictions about whether a child is likely, for example, to get into medical school some years in the future.

Simplistic predictions should not be made about children in the schools because it puts us in the potition of acting as a screening station for other institutions, according to what Kohlberg called the industrial model. In order to choose the most useful routes for children, we must become sensitive to many predictions and sensitive to variables that yield interaction effects.

General predictions are not useful if your purpose is to make a difference in a child's life. All children are in—indeed, compelled to be in—the school system. We who are the guardians of the educational process have the obligation to help make those schools friendly and useful places for them. Thus, we must have highly differentiated programs through which we can help youngsters realize their various potentials.

Chairman: Are you distinguishing long-range from short-range predictions?

Reynolds: No. The problem is not one of short- vs. long-range but the specification and choice of alternative educational programs for each child that are made not according to simple predictions but according to specific variables that help one to make a decision that will make a difference to the child as a learner.

Young: Might it not be helpful to talk in terms of diagnosis as far as the children are concerned and of prediction as far as the effects of a method or materials are concerned? You can make a diagnosis of the child and then predict whether the prescribed methods or treatment will work.

Reynolds: I feel that what you mean by diagnosis is a sensitivity to those characteristics of the child that help you to decide what to do that will be most useful to him; and I am right back to variables on which decisions are made.

Scriven: It seems to me that the moral is to work back from the pay-off. Find out what you can do differentially that helps the child and then work out tests that will make the distinction. What happened in the early days of "g" was really a prioristic in an important sense. Thorndike and others thought that if they could locate it, they would be able to fix up those little things that would help the child. But it did not work out that way so maybe what we ought to do is reverse the methodology.

Birch: The business of prediction needs to be dealt with in this way with teachers: (a) Psychologists who are now writing books and articles and are giving lectures in colleges and universities should clearly repudiate the general prediction instruments as they have been used. (b) We should not throw the baby out with the water. What we need to say to teachers is that of course the business of prediction is very important to them and we can illustrate it in a variety of ways relative to specific things that they are teaching or wish to teach. They can use charts if they wish because charts are not only records but, potentially, predictions. And we should help the teachers to use any kind of hard, instructional data that they acquire from the children they are teaching to use as predictors for what can be taught next.

Blocher: It seems to me that diagnostic processes are justified by their continuous tentative testimony. What got us into the bag that we are in is that we made very few major sorts of irrevocable decisions about children and we failed to test out the adequacy of those decisions. If you give a teacher a continuous flow of information, which she is trained to handle in tentative ways and to test continuously the outcomes of the hypotheses or decisions that she makes, you avoid most of the pitfalls.

Pribram: All of this has been done and gone through in the Russian system. The Russians have rejected general intelligence tests for just the reasons mentioned here and they did it deliberately. They do what has been suggested here, that is, they give tests as the children go along on a short-range basis. They have not done away with the notions of capacity or expectations. They leave it up to the child to meet the expectations with guidance on a short-term basis. They do away with prediction and, I think, that is where our system goes wrong. It is not up to us to predict what a child at, say, the age of five years is going to be like when he is 15. First of all, it is unnecessary, second, it cannot be done because there are differential growth rates in capacities, so why bother? Get rid of that part then the other parts are good.

Lindsley: Prediction, expectation, and capacity are all involved in the offices of navigation. Capacity is how much water you've got, how big is the ship, how big is the crew, etc. Expectation is how far away you think the port is; you know you have reached your expectation when you have made port. On the charts, expectation is either a child-teacher-determined goal or a norm derived from the speed that others work at. After you have charted a period of say two weeks, you can estimate how long it will take to reach that expectation. But the longer the course you are charting to your expectation, the higher the probability is that other factors will come in to influence it.

Chairman: I think there is pretty general agreement in the group on the following three points:

1. Classification methodology should begin with payoff and work backward.
2. The diagnostic method should be continuous, tentative, and testable.
3. Charting is one way of diagnosing and it can lead to useful extrapolations and suggestions for manipulation.

Kaslo: We must clarify the point that the old practices have led to the labeling of children and we must get beyond it. What we have done in psychology in the past is to hang labels on a lot of children from which they could never extract themselves. If we continue to do that, we are creating disaster.

Scriven: It seems to me that we are recommending a pretty sophisticated treatment of the labeling concept. In training programs, we should emphasize that labeling is interacting, that it is, in fact, often self-fulfilling, and that the willingness to label in dubious cases often stems from a power drive. Furthermore, when you are working with a test that was standardized on a group of people that were professionally matched 27 years ago, a correlation of say, .33 derived from that test is probably close to being valueless anyway. We do, however, have a belief system that supports using such tests and correlations.

We should also look, I think, at the role needs of the clinical psychologist in the school system. If we are going to cut part of his role, we must substitute something else to make him feel that he is still a scientist—or whatever the source of his gratification is—and I think we can do that. But we must act in a much more sophisticated way then we have in the past.

QUESTION II

How Can You Provide For Differences In Education Without Stigma?

Chairman: One way to look at the matter of labeling and stigma is in terms of how do we get past it? How do we make it useful?

Hatch: I wonder whether the question should not be phrased differently to read something like, "How does one deal with the stigma that differences produce, whether at the child-child level, child-teacher level, school-child level, or society-child level?" Differences exist among people and every single human being knows it. Because there are differences, there are stigmas.

Chairman: What does psychology have to offer to a society that is wont to try to stigmatize people?

Scriven: The problem with which we are dealing is that of the individual who needs massive, sustained, alternative treatment, such as the exceptional child. He goes to another part of the building because there are no aides or special features in the regular classroom to help him. The threat to him is not what is written on his chart by himself or us but in his self-conceptualization and in the conceptualizing of him by his peer-group and teacher. While it may be economical for a school to put Special Education in a different wing and have the children trooping down there, it is very expensive for those children.

Pribram: If we provide for individual differences honestly, the stigmata will go away. In effect, we have to make each child feel that he is a valuable person with certain things to contribute to the world.

Birch: The kinds of differences we want to be constructive about are differences in rate and amount of learning, so let's talk about them. Let's try to find appropriate labels for those differences. We cannot list them all right now, of course, but that should be our task. Too, let us not kid ourselves about our capability for changing whole societies, because labeling exists in all of society, not just in the school. Let us see if we can do something instructive—yes—but let us also face the fact that the problem is larger and encompasses more than psychologists and school children.

Bennett: The blind are the one group labeled handicapped and it does not seem to have the same kind of stigma that the other labels carry. When a blind child is incorporated into a regular classroom, I have observed that while he is treated differently, it is quite different from the way the Educable Mentally Retarded (EMR) child is treated. He becomes the retard to the other children. What are the subtle differences between the treatments? or don't they exist?

Q.: Don't mistake sympathy for the absence of a label.

Bennett: Sympathy and stigma are quite different to me. I wonder if the difference has to do with the attitudes that has made society look favorably at the blind. Perhaps the same thing is beginning to happen through the very strong parents' groups that are forcing us to incorporate in the classroom children who are really extremely different. So far, in society in general, such children always bear the stigma of being different.

Reynolds: Children can see a blind child functioning in ways that may be different but that give him competence. He learns how to use a braille typewriter in the third grade and he knows how to travel with a cane. But children do not understand the retarded child. And the deaf are in an intermediate position. Clearly, we must do our best to work with these children in ordinary settings without displacing them into specialized schools or classrooms.

Hall: I would like to have us think again about the term "diagnosis" that Young proposed, although it is a medical-model word. It seems to me that our troubles with prediction come when we hang numbers on children, when we say that a child is a 75 IQ or an EMR or some such thing. That is labeling a child—attaching a social stigmata to him. But the same thing does not happen with diagnosis. When I test a child in the third grade and say that he has the auditory discrimination skills of a first grader, both his mother and teacher can concur without getting all excited. I can tell them what to do about it and they can follow the program without feeling that the child is being stigmatized.

It seems to me that we have simply not refined our skills enough to know what we are looking for to make such diagnoses. We should be involved in doing so in terms of research, training, and communication with teachers. And we are trying to do it in my training program.

Scriven: Let me put in a plug for another practical possibility. I was brought up in a sort of non-graded school system where the social arrangements fractured a lot of labeling tendencies. For example, there were seven different English classes at different ability levels that had no relation whatsoever to the different math classes. Your social peer group was not with you all the time to get a lot of triangulation on you as stupid in general because you were with a completely different group in each class. I think that was socially good for each of us. It enormously influenced one's self-concept because no child was constantly labeled well down on a single scale. In some classrooms you might do pretty well and in other classrooms, very well. That is part of the attack on the social effects of labeling. A home-room teacher always sees a child in one way because she has a single scale for everyone; six different teachers dealing with the same child all treat him differently. The child does not have a self-concept built into him of always being at the bottom of the line.

Bennett: What happens if a child is at the bottom in every one of his courses?

Scriven: Then it is a bad school system. With a high degree of flexibility built in, you can perfectly clearly arrange classes to suit all children. You must have far more ability levels in each subject than grades.

Chairman: Would you go so far then to say that any school should be so organized that the child's peer group changes often enough to prevent his falling into the same distribution continuously and being classified?

Scriven: Why not look at that as one of your options in the schools for coping with the particular problem of labeling? It is workable and not expensive.

Birch: Another way of saying something perhaps a little different is that individual schools should be encompassing enough so that many, many different things can go on under the same roof. This approach would question, for instance, whether vocational programs should be segregated into different buildings from other secondary programs, for that gives us the same kind of labeling problem. My approach argues for having a large enough student body under one roof to permit all possible variations.

Chairman: It sounds as if we are leading to a conclusion that on the basis of what we know about psychological theory, homogeneous grouping is not the way to get at the matter of individual differences; any school system should have sufficient heterogeneity so that an individual's deficiencies cannot be used to label him wholly.

Pribram: What would that do to the individual's identity crisis?

Chairman: I would predict that the system would delay the crisis but that then the individual would establish his identity more accurately. The labeling will come slower; the individual will find it more difficult to know who he is because of the different messages he receives from outside; but, once these messages are integrated, his self-concept will be more accurate and stable.

Wall: Can we look at density as well as homogeneity of grouping? It seems to me we have some evidence to suggest tentatively that in an underpopulated situation every individual becomes essential to the maintenance of the setting, from which it seems to follow that individual differences would fade in importance.

Smith: An illustration of Wall's point would be the big school-small school difference. In a large high school, there are too many people for the number of niches to be filled. In a small school, everybody who can must play football, act in the theater, and go out for whatever other activities there are.

Blocher: Most of our environments are structured along the concept of necessary numbers.

Birch: That is a matter of how you organize the system. There is no reason why in a school of 100 youngsters you can't have one valedictorian and in a school of 400, four valedictorians. There are many large high schools where this sort of thing works effectively.

Chairman: There is another issue that is related to psychology and our concerns that I think is implicit in Wall's suggestion. That is, a group ought to be small enough so that a person can feel he is a member of it and get his identity from belonging to it. When that occurs, his differences from other people tend to fade away. We have been talking about acceleration and achievement and other such things but people bring other needs into the school situation, not the least of which is that they belong. I heard Wall say that if you keep the group small enough, people can belong; if the group is too big, you can find ways to say you don't belong.

Young: I am beginning to be able to phrase some hypotheses in my mind on how we have gotten to where we are in the public-school system. I suspect that a lot of it has to do with the way the system was structured in the first place. School psychology has not been in existence very long, relatively speaking. If in the mid-1880's, schools had been organized in such a way that individual differences could be recognized, and if the system could have adjusted to them, there would have been no need for school psychologists. The system was organized to group children on the basis of chronological age and we assumed that most children of the same age should be able to do about the same things at the same time and at the same rate.

Teachers discovered very quickly, particularly with the influx of increasingly larger groups in the last couple of generations, that things were not working the way they were supposed to. Someone had to explain why. And that, apparently, is how we started labeling children —so that we could talk about them. If I describe a child as EMH (Educable Mentally Handicapped), I do not have to describe him further; we understand what we are talking about. We had to use that kind of shorthand to communicate because the job was too big otherwise.

The use of labels arose as a result of the lack of validity of the original assumptions underlying the school-system organization. If there had been a set of valid assumptions and, at the same time, technology and administrative knowledge had been far enough advanced, we could have accommodated large masses of children and adjusted to their individual differences. Under these circumstances, we would not have a labeling problem nor would we have school psychologists.

We manufactured the need that led to the creation of school psychology and now school psychology is showing us how to eliminate that need.

Chairman: Did I understand you to say that we labeled EMH children so that we could talk about and understand them?

Young: That was one of the reasons but not the only one. State legislatures were involved, too. When they offered to help support financially programs for some of these children, school administrators asked psychologists how to classify children so that they could decide which ones should be in the supported programs.

Birch: The man who did this for education was J. E. Wallace Wallin who started a psychoeducational clinic at the University of Pittsburgh in 1912.

Reynolds: The late John Anderson of the Institute of Child Development, at the University of Minnesota, used to tell us that the three-way breakdown of the mentally retarded existed way back in the nineteenth century, long before people even started talking about intelligence tests.

Young: The organization of the institution of schools created problems that required school psychologists or, you can say, that psychologists thought they might be able to help solve. I did not mean to imply that the school organization created the EMH children; I know they were there all along.

Q.: It seems to me that in order to maintain their competence and skills, school psychologists need continually to be reoriented, brought up to date, strengthened, retrained—we do not hear a lot of this coming from the profession that should probably be the one summing up its main importance.

Lindsley: I think that what educational psychology is in terms of many of the graduate courses is psychology for education. The "education" is the adjective, the "psychology" is the noun—and that is almost a dead give-away.

Hall: There is a difference between educational psychology as a foundation for professors who are going to teach courses in that area and school psychology in which our people go out and spend the greater part of their first 2, 3, or 4 years in training in the schools. And it is what is happening in many places.

Lindsley: I think that what I am trying to say is that the source of a lot of our troubles in education is that many of the diagnostic tests that are used were the application to the schools of a pretty straight-out psychological theory without any modification at all.

Bennett: Or the reverse. The little bit of psychology becomes an overlay. Dr. Hall and I run similar programs and I think we would both agree that there are ways of integrating psychology into education to produce a psychologist who will have an impact on the schools. Many of the problems have come about because the label school psychologist has been misapplied to a lot of unqualified people.

QUESTION III

Does It Make Any Difference Why A Learner Doesn't Learn?

Birch: I think the answer is no and yes. From one point of view I would say *no* to the question in order to emphasize the rather inadequate approach we have taken in the past to working with anybody who seems to manifest some kind of learning problem. In order to teach teachers how to approach a learning problem, it is still a rather common device for psychologists to use the case study as a way of finding out about antecedent events in the child's life that are related in some way to his present situation. This use of the case study is based on the notion of the possibility of making some kind of a diagnosis of the learning problem and then setting up procedures to eliminate it. Useful as this approach may be for some life problems, it is notably of little value in working with children who have learning problems.

What we are really after is not what the problem was but how to produce learning. That is where the focus needs to be and usually is not in the psychological textbooks the teachers read, in the clinics operated by psychologists, or in the courses teaching teachers how to study learning problems. Gattegno and Lindsley have shown us that they know how to turn a child on; they do not worry about what turned him off. I want us to repudiate those procedures that we have taught in the past by telling our students that they are wrong and by writing publishers and authors to tell them that the textbooks should be rewritten.

My positive answer to the question is based on the fact that sometimes it may be important to know why a learner doesn't learn. For instance, was it because his teacher did not know how to teach him? If that is the reason, the teacher isn't performing appropriately and we need to do something about recycling that individual to get either performance or the individual out of the school system.

Are the instructional materials inappropriate? You might say that the use of appropriate materials is part of a teacher's knowing how to teach. But then we have to make sure that our teachers receive sufficient training in the sources and use of a wide range of instructional materials.

Blocher: The problem seems to be that we do not teach the teachers that the most parsimonious explanation for a child's failure to learn is that there is something wrong with him. It seems equally important not to plant in teachers' minds the idea that when a child fails to learn somebody is morally to blame. That problem of blaming somebody seems to have gotten us into our present position.

Birch: To blame someone professionally, if not morally.

Scriven: The fact still remains that some children have less or more of a capacity for learning than other children. It is important for a teacher to know whether he should put more time into trying to motivate a child, switching to other materials, using another methodology, or adjusting to the child's capacity.

Hall: I would like to get back to the notion of taking a much more sophisticated look at this old business of testing and not throwing the whole procedure out. Instead of using tests that are labeling devices, we must devise instruments that are diagnostic. We must use them preventively as epidemiological screening instruments for specific narrow-gauged variables.

I want to be able to do what we did with 120 first graders in 12 first grades this year. We looked at all of them and sorted out which ones are going to have auditory discrimination problems, which ones have at this point visual perception difficulties, and which ones have spatial orientation difficulties. We found that 25 percent of the children had no difficulties at all. These children were in ghetto schools where the teachers told us the children were dumb, and that they were all in need of Special Education. Yet we found that 25 percent of the children were fine; they should have been flying but noone was flying with them until we produced our results. The rest of the children were able to perform well in four to eight areas for every area in which they showed some developmental lag. We put them in groups where their special needs could be dealt with and they could move ahead fully in the other areas. So they were not labeled as retarded.

If we can take a much more sophisticated look at (a) testing and (b) children, knowing that they do not all move along at the same rate, that there are differences in capacities within and between children, we have something of a task to do. We taught the teachers to do the screening; they did the tests for auditory discrimination, socialization, motor skills, and so forth. For those children for whom these tests were not precise enough, we did full-scale work-ups.

Reynolds: When you talk of developmental lag in children, Dr. Hall, do you mean that flat profiles are better than jagged ones?

Hall: I assume that all profiles will be jagged but with individual patterns.

Reynolds: It seems to me that children do not have auditory, visual, or perception problems, for example, except as you think about the kinds of situations in which you are going to place them. All children have problems if they live in environments in which they are likely to eat lead. Yet there are ways of teaching reading and so on that do not depend upon the assumption of the child's having problems.

Too, I seriously question the whole concept of prevention in education. What Kohlberg and all of us have been saying is that it is our job in education to help children develop. We do not work against negative criteria. We are not essentially working to reduce school dropouts; we are working for the opportunity to educate and help more children to develop adequately. When you start talking in terms of prevention, do you mean you are going to prevent reading problems? No. You want to get children into reading programs that will teach them to read. You want to get children into school programs that will be useful for them. The whole concept of prevention, whether of auditory defects or developmental lags, troubles me.

Pribram: May I offer an alternative phrase? Instead of medical-model terminology, use the biological, that is, talk about the internal ecology of each child. Then you don't have to worry about making diagnoses, picking out deficiencies, or setting up preventive procedures; you are concerned with maximizing the internal ecology of each child.

Scriven: I would like to suggest that the most dangerous label of all is age. The minute somebody starts talking about lags and the diagnostic game I become worried because it sounds to me as if we were turning differences into deficiencies a little too easily. When anyone starts talking about classes with 25 percent normals I am concerned because, if I have a system of identifying abnormality that results in five or two or one percent of the classroom, whatever its background, being so labeled, I must examine the definition of abnormality used.

The whole business of learning disability, which slides into the classification of Special Education, is a very bad scene. To me, it looks like empire building on the self-concepts of children. The good thing at the other end, of course, is that disadvantaged education in many cases is a trick way of getting individualized instruction. Although there is nothing wrong with many of the children, if we are to get tough-minded and call for real proof that deficiency does not just mean different, they do better as the result of the intervention. We must be honest on the subject because it is dishonest to treat such children as if they have learning disabilities of some kind. Although such labeling may make funds more readily available to intervene in their educational experiences, the subterfuge hurts them and confuses the teacher. It aggrandizes an arm of the educational empire that we do not want to aggrandize and it prevents us getting in there with a good claim for individualized education for all children.

Hall: Without belaboring the point that Scriven made, I still think we have two very significant strategies that we can use. (a) We can take a much more sophisticated look at development. By developmental lag, I mean that the individual child grows at different rates in different kinds of capacities. Not many teachers have had very much training in this way of looking at children. It is the essence of developmental psychology and it is missing in almost all teacher training.

(b) The second most important strategy that psychologists can provide is the notion of screening, screening a total population epidemiologically. Despite Reynold's and my coming from the same institution, we have different notions of what prevention is. By screening preventively, I mean simply looking at a total population in order to be able to sort out those children who are going to need a more thorough kind of diagnosis—call it what you will. We are at the place in our educational procedures where we can simply no longer go along letting children fail year after year and paying attention to them only when they drop out of school. We started looking at children in the twelfth grade and concluded that the attention must be paid to them in the first grade.

If we can think about development and screening, we have in our hands two concepts that psychologists know something about and that can be put into teacher training.

Reynolds: Certainly I am in favor of the study of child development. I became worried, however, about the definition of a lag. Screening, to use Dr. Hall's word, for the purposes of doing more thorough studies of individual children, seems to me to be basically focussed on an educational engagement of the child in productive terms. Yet that engagement must necessarily be carried out as a commitment to help the child develop rather than as a preventative. How is the word prevention involved? Surely one prevents problems in algebra by teaching arithmetic carefully and in reading by reducing the rate of reading failures through careful teaching. But the teacher is oriented toward a positive criterion, not a negative one, in each instance.

Scriven: I wonder how many of you have seen the Russell Sage Report on schools and information systems? When we got together to write the report, the group decided unanimously to recommend legislation that would eliminate the storing of information about children in school data banks. This group recommended to cut out such data storing because of the costs when such information is used. We knew that it meant that, for example, cancer cures would sometimes not be discovered because retroactive studies could not be done. Nevertheless, the group felt that there was no other way to act. The optimal situation is data just before the last moment when disasters can be averted.

Blocher: You are talking about the data that is stored in children's folders. I just did a study in which 860 teachers were asked whether they used such folders for information on children. Only 22% said they frequently consulted the folders; 78% said they did not. We don't have to worry about the 78% of the teachers; they will not be contaminated by what is in the folders because they seldom go near them.

The kind of information we need is the continuous flow about the child as a learner in his learning environment. Perhaps we could pay teachers to get that information and to use it to make short-term continuous kinds of decisions about what to teach the child next. There is not a two-way flow of information in the classroom. Sarason said that the modal number of questions asked in a classroom was two for the children and several hundred for the teacher. Thus, she is not getting a considerable amount of very relevant data in a form that she can use in most classroom situations. Were she getting the data, many of the questions about pevention of problems, developmental lags, classifying stigmas, and so forth, would not exist.

Smith: I don't think Blocher's statement is true for elementary-school teachers. In the schools that I have observed, the teachers move around the rooms in a teaching-in-motion kind of activity, looking at children's papers. It seems to me that they are getting immediate and precise and situation-subject, pupil-specific information about what is going on in the classroom.

Lindsley: But that kind of information is of no value. Rate won't predict outcome; percent correct won't predict outcome; teachers cannot predict outcome.

Chairman: I submit that one of the psychological problems that we must face is how to identify what is the relevant data and how to get it.

Lindsley: Then you must specify the relevant data for what purposes and under what circumstances.

Chairman: I do not think that we are in a position right now to specify, but we are in a position to say that until we do, we are not in a position to be very helpful to the classroom teacher.

Allman: What kinds of information are we going to be concerned with?

Blocher: Psychological data and a great deal of data on what is happening in the classroom. For example, is it not common that many teachers do not discover that they have an auditorily handicapped child in the classroom?

Hall: We found that the teachers with whom we were dealing, who were well trained and, I think, fairly typical, were unaware of the reasons why children were not learning in their classrooms.

Blocher: Including gross things like deafness, visual deficiencies. When a teacher has a child for two or three months and does not know that the child has an auditory handicap, the flow of information in that classroom is not very good. If a teacher does not know that a child is having trouble hearing her, just think of how many other kinds of things she doesn't know about the child!

Smith: There are individual differences in teacher awareness. To contract the range of differences or to raise the levels of awareness is another kind of problem.

Creative Propositions: A Working Draft (Presenter-Critic Group)

- To date, the contribution of psychology to schooling has been negligible or harmful.
- The major contribution of psychology to schooling has been its negative findings.
- Sound educational objectives must be based in part on a study of the learner.
- Psychological theories of learning and personality used by teachers have been drawn from work on individual organisms.
- What is needed is a well-formulated theory of instruction in a group situation.
- The learning of an individual in the classroom is a function of his social nature as well as of his individual growth.
- A better model for teaching teachers is coaching rather than teaching.
- Teachers in general are abysmally ignorant of psychology.
- Psychologists must restore to teachers the right to their own insights.
- Preparation for the use of psychological knowledge is different from the preparation for the pursuit of psychology.
- Acquisition of skills requires concentration and isolation.
- Understanding of concepts (life) can often be accomplished better in groups through sharing, etc.
- Since the act of teaching is a contractual relation, the contract and the means for revision should be made explicit.
- Any instructional system that systematically destroys self-esteem should be altered or abandoned.
- Since the normal distribution of most psychological traits is an artifact of the statistical procedures used in measurement, it should not be used except in cases where it is a valid representation of the phenomena.
- Since teaching is an act of competence, schools of education must find ways to assess competence for certification rather than the completion of courses or accumulation of credits.
- Psychological knowledge should be translated into English and the classroom applications before being presented to the teachers.
- Teaching should include the study of learning processes.
- The preparation of teachers must include experiences that help

them to become aware of themselves as teachers so that they can be aware of the students they teach.

☐ Learning to teach requires experiential as well as didactic and theoretical inputs.

☐ Teachers must know that what they share with parents is a way of working with children; parents must understand the teacher's uniqueness.

☐ A good instructional system requires two-way communication between teachers and learners.

☐ The lecture became obsolescent with the invention of the Guttenberg printing press.

☐ Almost any move toward individualization of content, process, and method is justified.

☐ To individualize mass education requires structural rearrangement of schooling as we now know it.

☐ A better teacher comes because he becomes aware of the problems of teaching.

☐ Do not teach anything a person already knows or that he can learn by himself.

☐ Change will occur when two divergent systems marry.

Training Professionals in Atheoretical Fields

Michael Scriven

1. The assigned task of this Conference is *to improve the conduct of schooling by using knowledge from psychology.*
2. It is apparent that two major practical aspects of this task involve
   (a) training teachers better;
   (b) training school psychologists better;
   and each enterprise requires the conveying of certain *methods* and *content.*
3. If psychological knowledge could be adequately expressed in terms of several highly abstract and highly general theories, as can classical dynamics and astrophysics, then we could apply these theories to the (psychological) phenomenon of teaching and hence improve it. That would give us our *method*, and our *content* would of course include these theories and relevant facts. And we would have the answer to how psychology can be used to improve schooling.
4. But it turns out that psychological knowledge must be regarded as extremely poverty-stricken or, at least, as extremely elusive to theoretical formulations. The best attempts to produce propositional forms of it, of any degree of generality and interest (and theories must be propositional, general, and interesting, i.e., nontrivial), result in truisms or ambiguous jargon. There are no quantitative propositions in Berelson and Steiner's summary of knowledge in the behavioral sciences,* and not many novelties (for, say, the average twelfth grader).
5. The pessimistic conclusion, that psychology is knowledge-poor, is highly attractive until you see someone who has learned enough about human (or animal) behavior so that he can do something others cannot do. He has psychological knowledge, built into him *but not convertible into verbal forms.* This is the area for *training* or *coaching*, not for lecturing, as far as transmittal of knowledge is concerned.
6. Although we usually think of training or coaching for the imparting of psychomotor skills, it is clear that some of the oldest examples of it have been aimed at affective goals (courage in Spartans, business sense, confidence in princes, courtesans, and patrons of Dale Carnegie or Esalen) or, crucial for us, cognitive

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* Berelson, B., & Steiner, G. *Human behavior.* N.Y.: Harcourt, Brace & World, 1967.

ones such as skill in spelling, speaking, arguing, grammatical construction, arithmetic ability, etc., in short, much basic education.

7. Notice how irrelevant to the "training model" (or "shaping model") is all the research work on learning nonsense syllables and other verbal material. It was a typically academic approach to suppose that verbal learning or, for that matter, visual discrimination, would be a good model of human learning.
8. I am not *merely* deploring the use of *nonsense* syllables rather than *meaningful* material. Transfer of *verbalizable knowledge* is the wrong category *altogether*—for *much* of education; and even where that is what you want, learning it *as such* is often not possible.
9. Now the process of imparting knowledge via training or shaping is certainly *part* of the business of education and hence the study of this process is the business of educational psychology. One of the strengths of Skinner's approach was its focus on clear cases of demonstrated learning (e.g., in animal training) and the attempt to extract a general theory out of it.
10. Skinner's theory can be read and the written material thoroughly understood at the verbal level, without the reader being much better as an animal trainer; certainly without achieving the skill of Skinner or a Skinner *trainee*.
11. It goes very much against our grain as academics to think that much of the crucial knowledge in a field like psychology of learning and teaching can only be passed on by supervised practice. We conceded that chemists acquire lab skills by lab work; but *chemistry itself* is in the texts. In psychology, almost the reverse is the case; the *method* is in the texts; the *content* must be learned by training!
12. Now, in fact, the texts contain a great deal more, much of it interesting (comparative psychology, abnormal, etc.) But this knowledge is very much on a par with knowledge of other lands and other times; and geography/history are the great atheoretical subjects. This knowledge is *limited, local*—although it is much more than a list of *individual* facts.
13. Of course, psychology texts also contain what they call *theories*, much to the amusement of physicists. These performances are certainly *speculative rather than factual*, which is one sense of "theory." And they involve terms that are not just observational, which is another criterion. But they are not much like the paradigms of physical theory. Nor is evolutionary theory, and one might say that psychology does have some of these insights-leading-to-conceptualizations-and-explanations (but very few precise predictions). One main difference from evolutionary biology

is the characteristic presence of several theories, for each field of phenomena, apparently incompatible but not clearly distinguishable on the evidence. (Kohlberg's moral-stage theory is as near to an exception as I know.) I think "speculations" or "conceptualizations" is the best term for these.

14. There remains the rhetoric of the trainers, the slogans of the salesman—to be found in McGuffey as well as in Gattegno, in Montessori as well as in Dale Carnegie. One might call these slogans "theories" but I think that to do so is very misleading. These slogans have a quite different epistemology. Their prime concern is *not* the condensation of propositional knowledge: it is the *focussing of attention*. They are *advice*, not *axiom sets*, *"morals"* not *models*, *parables* not *paradigms*.
15. The most creative proposition we can produce is "Creativity is not propositional." More specifically, "Learning is not (just) propositional" and (so) "Teaching is not (just) propositional." It follows that educational psychology must be concerned with understanding and facilitating training and not just talking procedures. And the philosophy of education must look at the cognitive elements it has ignored—the parable, the aphorism, the anecdote, the hint, the mnemonic, the truism—not the law of nature, the mathematical axiom, etc.
16. We already have the ingredients of immense educational change: master teachers who can produce immense changes, procedures for proving this, procedures than can make almost any teacher try change, understanding of the power structure, available funding, models for democratic, cooperative, successful change.
17. In Ausubel's terms, I think that major *blocks* rather than major *gaps* provide many of the explanations of our failures. In the above, I have been suggesting that one of these blocks is a basic philosophical confusion to the effect that respectable knowledge must be propositional. That leads us to think, or status considerations dictate, that the teacher and the psychologist must have this kind of knowledge to impart, so that teaching becomes the passing on of propositions.
18. What are the consequences of this view for the actual training of the teacher? It suggests tremendous emphasis on the reproduction of experience whenever the real thing is not available or not pedagogically manageable; the use of simulation, role-playing, audiovisual materials, interactive CAI, etc. (Notice that this comes about not because of a move to affective objectives, but through rethinking the nature of cognitive ones.) In short, the aim should be to refute the terrible indictment of the school embodied in the practical parents' remark that they want to get their child "out of school into the real world so that he can learn something."

Facilitating Change in Human Systems

D. Blocher

1.0 Define professional goals in terms of institutional needs.

2.0 Rank order general professional goals in terms of feasibility and payoff.

3.0 Scan relevant environments for opportunities to advance regular professional goals.

4.0 Identify potential target (client) systems.

5.0 Open communication with, within, and around client system.

.1 Create 2-way broadband (expressive-instrumental-positive negative) communication network touching each member of target system.

6.0 Build helping relationships with, within, and around client system. (Create relationship network characterized by involvement, openness, empathy, trust.)

7.0 Negotiate specific behavioral goals (learning contract) with client system.

8.0 Introduce new cognitive structures to client system. (Work for permeability-flexibility in client cognitive structures.)

9.0 Model goal-relevant behaviors for client system.

10.0 Shape specific goal-relevant behaviors in client system.

11.0 Integrate new cognitive structures and behaviors in client system through simulation. (Role playing, practice teaching, other clinical experiences.)

12.0 Transfer new client learning to operational environment(s).

13.0 Attach new client learning to maintainers (reinforcers) in operational environment.

14.0 Evaluate process and outcome.

Epilogue

The postscript to every conference is the attempt to evaluate the proceedings. Were the goals achieved? Were new ideas and approaches to the focal question generated? Did participation make a difference to the conferees? Was the conference a dead end or a spring board?

The participants in the Conference on Psychology and the Process of Schooling in the Next Decade: Alternative Conceptions, met from Sunday night, December 13, to Thursday noon, December 17, 1970 in the Bromwood Conference Center. They read papers, listened to presentations by the Presenters and Critics, heard reports of the Institutional representatives, participated in formal and informal discussions, and interacted with each other on many different levels. The Center had been chose for the meetings on the assumption that the isolation, informality, and social interdependence of the conferees would quickly weld them into a working group and would encourage a running, deepening dialog between psychologists and educators. Out of the dialog, it was hoped, would develop the concepts that could be translated into actionable programs. Unfortunately, but perhaps unavoidably, the dialog developed slowly.

The schooling of children is influenced by psychology through two avenues: professional practitioners in the schools and concepts from which are derived many of the policies and practices governing the conduct of the schools. While psychologists and educators have displayed considerable interest in revising the training of psychological personnel to meet the changing needs of schools, too little attention has been given to the psychological concepts on which many educational practices are based. By posing the focal question, "How can the conduct of schooling be improved by the utilization of knowledge from psychology?", this Conference began a serious and little-precedented discussion of the total influence of psychology on the education of children now and in the future. Much of the discussions, consequently, centered on the critical examination of current practices as a way of delineating those areas in which new approaches are essential. A great many notions for the future were advanced also, but little synthesis, occurred, perhaps because the area of discussion was so large and so new. In retrospect, it seems possible that the organizers of the Conference were overly optimistic to expect any substantial synthesis to take place in such a short meeting time.

The training programs described by the Arizona, Minnesota, and Pittsburgh groups were innovative and interesting but they reflected the ideas of the Conference only peripherally. The proposal advanced by the Southern Group to increase the school-oriented psychological resources of their area reflected the impact of the discussions on the representatives' understandings of the desperate, educational needs of the South, in itself, however, the proposal was an approach to meeting some of those needs rather than a program with general application.

If few answers to the focal question of the Conference were unequivocally stated, many questions reflecting the seriousness and importance with which the conferees regarded the areas of discussion were generated. There follows a summary of some of the major points raised:

1. If it is true that the knowledge advanced by psychologists to educators in theoretical form has proven to be relatively useless, what help can be given by psychology in devising alternative approaches to the training of school personnel?

2. What help can psychology give in organizing the curriculum and instruction in the schools? Is the problem essentially a matter of learning codes?

3. Should not the psychology taught to teachers be different from the psychology taught to psychologists? For teachers, how can the emphasis on behavior in classrooms be developed?

4. To what extent should and how could schools organize to use groups of children as units rather than to be so exclusively oriented to individualism?

5. Can psychology address the real problem of the teacher who must work with groups of children while at the same time he is concerned with individualizing education?

6. How can psychologists help educators to conduct schools that seek and value heterogeneity rather than homogeneity in pupil characteristics as an organizing principle?

7. How can the measurement and quantifying aspects of psychology be put to use in the improvement of the instruction of children rather than in the making of predictions and irrelevant classifications that are often harmful to children?

8. To what extent does developmental psychology present a normative model for the curriculum? Does it give education goals as well as explanations?

9. If teachers should take account of what children bring with them when they enter school, as opposed to the negative view of what they do not know, how can psychology help teachers to develop the necessary awareness?

10. If psychology more than any other professional group is responsible for some of the present problems in schools, can psychologists become instruments of change in the schools? Can psychology change its attitude and approaches to schools sufficiently so that psychologists can be trained to fill the role of change agent?

In sum, while the immediate purposes of the Conference were not explicitly achieved, the meetings served as a springboard. They not only opened the way for new considerations of many problems besetting the relation of psychology and education but they provided a stimulus for the generation of new ideas about education and about psychology itself. Some weeks after the Conference, the Chairman invited the participants to write in their afterthoughts, to express the notions they had developed as a result of the Conference. The following excerpts have been selected for inclusion here:

Dr. C. Backman

Teaching procedures and classroom organization should maximize the learner's experience of success and minimize the experience of invidious comparison.

Dr. C. Gattegno

To be truly effective in education, psychology must be defined in human terms and be concerned with what is actually educable in man through his growth. . . .

Learning in human beings has two aspects: becoming aware of different fields of activity and using one's time to acquire the skills involved in these fields. . . .

Dr. N. L. Haggerson

Scholars, be they brain surgeons or mathematicians, are all dealing with very basic moral issues; they have this in common with those of us not so scholarly, but who are likewise searching. Hence, we have a concern that is more fundamental than "what does psychology contribute to education." We have a common concern about the basic issues involved in educating our youth and ourselves. . . .

Dr. M. Hall

. . . Since I saw the challenges of the sessions largely in terms of the missing synthesizing and implimenting elements, those are the two approaches I should like to bring into focus.

I. *Synthesis:* Despite the surface dissonance between Pribram's organic and Gattegno's organismic approaches, it may be that they came close to telling us what *process* is involved in teaching-learning. Basically, Pribram's *coding* or language building is what Gattegno demonstrated when he "imposed structure" on the materials to be taught. The learner in Pribram's system "enacts the images," "translates many languages into a common language"; in Gattegno's terms he participates in "an act of discovery" or a "direct experience of self." Both emphasize the active (dynamic) relation between the cue-provider, coder, structure-imposer and the discoverer, enacter, translator.

II. *Implimentation:* Given this process look at what education is all about. The group should have moved ahead to ask questions about how educators could maximize the provision of structures without delimiting discovery. We fell into the old trap of self-flagellation and, although we talked of "expectancies," "affective bias," and "feedback systems," we never achieved a common language. The act of discovery was no more than awareness of the individual self. We failed, I think, until the closing moments to be conscious of the learner as a self in a community of learners. In practice, we dichotomized the teaching-learning functions, even while we were trying to formulate a dynamic, interactional, process model.

Dr. R. A. Heimann

. . . I think it is significant that as we attempt to sharpen our conceptualizations in Counseling Psychology we look more critically at cognitive development as an aid in the client's decision-making processes. Decision making itself may be a type of language that we need to teach our clients so that they may make decisions more accurately and perceptively. If we view decision making as a language in itself that can be taught, I think we are coming along toward this end. . . .

Certainly, those of us in Counseling Psychology should stay closely attuned to what's going on in the larger body of professional psychology as an aid to our greater understanding of the process of human behavior and human behavioral change. It may be too much to expect this to permeate the entire school structure overnight, but if the counselor can release himself from the paper shuffling, semi-administrative activities that so often plague him, and plunge into the school community as a change agent using psychological principles, he may justify his purposes to a higher degree than simply a clinician working with individuals. It would seem to me that the utilization of psychological techniques in helping people involved in the school-community establishment ask critical questions and work out a plausible array of answers would go a long way to resolving the current impasse in American education.

Dr. L. Kohlberg

Perhaps the basic contribution of psychology to schooling is to guide and assess curriculum, classroom, and school atmosphere and structure, . . .

Dr. S. B. Sarason

1. One of the most important problem areas deserving focussed study is the motile way in which innovations are introduced into ongoing school systems. Until we describe and understand the motile process of change, we will be unable to explain why so many innovations fail.

. . . .

3. In those instances where universities wish to change radically their training of school psychologists or school counselors, and support for this is being requested of the Office of Education, that office should encourage the university department by appropriate support to enter into agreements with surrounding school systems to hire this new type of person.

Dr. M. Scriven

1. Most propositional knowledge in psychology is either particular or refers to possibilities and not general rules or laws. Hence the whole epistemology and pedagogy are different.

2. Teaching psychologists theory only trains psychologists to be theorists. (Lemma of 1.)

3. Chronological age *as such* is potentially the most damaging label for children. Or, age is the worst of all pigeonholes. The whole notion of "retarded" is given much of its illegitimate application by simply using an inappropriately rigid age-reference. Given what we know about late-blooming and unstable precocity, most of the categorizing of this kind should be junked.

Dr. L. M. Smith

. . . A number of propositions remain from the Bromwood Conference, some because they may have been around before and the Conference reassured them.

1. For general psychology to have a major impact upon education, an intermediary theory of teaching must be developed. The attempts to apply Hull, Freud, or whoever have been ill conceived. They are too abstract and too far from the kind of situations that are called classrooms or educational settings. The intermediate or substantive theory of teaching should be relatable to, perhaps isomorphic with, the more general theories of psychology. Essentially this is a variant of Sarason's position.

2. Many conceptualizations of teaching espoused by brilliant teachers are much too simple to catch the nuances of their performances. Lindsley and Gattegno are exciting teachers; their theoretical stances did not do their teaching justice.

3. Language learning, teaching in general, and theoretical statements about teaching are interdependent at several levels. Exploration of these interdependencies might have a major payoff for educational psychology.

4. Groups are different from "collections of individuals." The processes involved in making any collection of individuals into a group, or a class at the elementary or secondary level, is a major problem not faced by general psychology—or educational psychology.

5. The malleability of human beings has been overemphasized by many psychologists.

6. Psychology's major contribution to education will be through teacher training preservice and inservice, rather than through additional special services and personnel. The numbers of children are too great.

Dr. P. L. Ware

I. Train superintendents and school administrators how to effect constructive change. Most classrooms today are being conducted just as they were 40 years ago. Little federal or foundation money has been spent for training school administrators in how to effect change. Problems associated with massive change are legion; none is quite so demanding as moving toward a unitary school system. Most superintendents and other administrators are unprepared for this transition. We urgently need a series of workshops which would include special work in the psychology of change.

II. Train psychologists to work directly with teachers. The work of the psychologist must be more closely connected with the classroom. He must work with teachers the same way as the doctor works in cooperation with x-ray specialists, laboratory technicians, or nurses. . . .

* * * *

It was evident at the Conference that psychologists and educators are just not accustomed to talking with each other. If the Bromwood Conference did nothing else, it demonstrated the willingness of both to sit down together and to try to find answers to problems such as the focal question of this Conference. A beginning, indeed, was made in the dialog that is essential. Perhaps by using the Proceedings of the Conference as a starting point, other groups of psychologists, educators, and community representatives in other places can carry the discussion forward. Such interchanges should not be regarded as theoretical exercises; they are recognitions of the interdependence of psychology and education in meeting the needs of the children with whom we are all concerned.